

FIG. 2

10 20 30 40 50 60  
 MDPAEAVLQEKALKFMNSSEREDCNNGEPPRKIIPEKNSLRQTYNSCARLCLNQETVCLA  
 70 80 90 100 110 120  
 STAMKTENCVAKTKLANGTSSMIVPKQRKLSASYEKEKELCVKYFEQWSESDQVEFVEHL  
 130 140 150 160 170 180  
 ISQMCHYQHGHIINSYLKPMQLQDFITALPARGLDHIAENILSYLDAKSLCAAELVCKEWY  
 190 200 210 220 230 240  
 RVTSDGMLWKKLIERMVRTDSLWRGLAERRGWGQYLFKNKPPDGNAPPNSFYRALYPKII  
 250 260 270 280 290 300  
 QDIETIESNWRGCRHSLQRIHCRSETSGVYCLQYDDQKIVSGLRDNTIKIWDKNTLECK  
 310 320 330 340 350 360  
 RILTGHTGSVLCLQYDERVITGSSDSTVRVWDVNTGEMLNTLIHHCEAVLHLRFNNGMM  
 370 380 390 400 410 420  
 VTCSKDRSIAVWDMASPTDITLRRVLVGHRAAVNVVDFDDKYIVSASGDRTIKVWNTSTC  
 430 440 450 460 470 480  
 EFVRTLNHGKRGIAQLQYRDLVVGSSDNTIRLWDIECGACLRVLEGHEELVRCIRFDN  
 490 500 510 520 530 540  
 KRIVSGAYDGKIKVWDLVAALDPRAPAGTLCLRTLVEHSGRVFRLQFDEFQIVSSSHDDT  
 550 560  
 ILIWDFLNDPAAQAEPSPSRPTYTYISR

FIG. 3A

10 20 30 40 50 60 70 80 90  
 TGCCTTGGCTGCGGCTGGCACCAAGGGCGGCGGCGGAGAGCGGACCCAGTGGGCTCGGCGATTATGGACCCGGCGAGGGCGGTGCTGC

100 110 120 130 140 150 160 170 180  
 AAGAGAAGGCACTCAAGTTTATGAATTCTCTCAGAGAGAGAAGACTGTAATAATGGCGAAGCCCTAGGAAGATAATACCAGAGAAGAATTCAC

190 200 210 220 230 240 250 260 270 280  
 TAGACAGACATACAACAGCTGTGCCAGACTCTGCTTAAACCAAGAAACAGTATGTTTAGCAAGCACTGCTATGAAGACTGAGAATTGTGTGGCC

290 300 310 320 330 340 350 360 370  
 AAAACAAACTTGCCAAATGGCACTTCCAGTATGATTGTGCCAAGCAACGGAACCTCTCAGCAAGCTATGAAAAGGAAAAGGAACCTGTGTGTCA

380 390 400 410 420 430 440 450 460 470  
 AATACTTTGAGCAGTGGTCAGAGTCAGATCAAGTGAATTGTGGAACATCTTATATCCAAATGTGTCTATTACCAACATGGGCACATAAACTC

480 490 500 510 520 530 540 550 560  
 GTATCTTAAACCTATGTTGCAGAGAGATTTCATAACTGCTCTGCCAGCTGGGGATTGGATCATATCGCTGAGAACATCTGTGCATACCTGGAT

570 580 590 600 610 620 630 640 650  
 GCCAAATCACTATGTGCTGCTGAACCTTGTGTGCAAGGAATGGTACCGAGTGACCTCTGATGGCATGCTGTGGAAGAAGCTTATCGAGAGAATGG

660 670 680 690 700 710 720 730 740 750  
 TCAGGACAGATTCTCTGTGGAGAGGCGCTGGCAGAACGAAGAGGATGGGGACAGTATTTATTCAAAAACAAACCTCCTGACGGGAATGCTCCTCC

760 770 780 790 800 810 820 830 840  
 CAACCTCTTTTATAGAGCACTTTATCCTAAAATTATACAAGACATTGAGACAATAGAATCTAATTGGAGATGTGGAAGACATAGTTTACAGAGA

850 860 870 880 890 900 910 920 930 940  
 ATTCACTGCCGAAGTGAAACAAGCAAAGGAGTTTACTGTTTACAGATGATGATCAGAAAATAGTAAGCGGCTTCGAGACAACACAATCAAGA

950 960 970 980 990 1000 1010 1020 1030  
 TCTGGGATAAAAAACACATTGGAATGCAAGCGAATTCTCACAGGCCATACAGGTTCACTCTGTCTCCAGTATGATGAGAGAGTGATCATAAC

1040 1050 1060 1070 1080 1090 1100 1110 1120  
 AGGATCATCGGATTCCACGGTCAGAGTGTGGGATGTAATAACAGGTGAAATGCTAAACACGTTGATTACCATTTGTGAAGCAGTTCTGCACCTTG

1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
 CGTTTCAATAATGGCATGATGGTACCTGCTCCAAAGATCGTTCCATTGCTGTATGGGATATGGCCTCCCAACTGACATTACCTCCGGAGGG

1230 1240 1250 1260 1270 1280 1290 1300 1310  
 TGCTGGTCCGACACCGAGCTGCTGTCAATGTTGTAGACTTTGATGACAAGTACATTGTTTCTGCATCTGGGGATAGAAGTATAAAGGTATGGAA

1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
 CACAAGTACTTGTGAATTGTGAAGACCTTAAATGGACACAAACGAGGCATTGCTGTGTTGCAGTACAGGGACAGGCTGGTAGTGAGTGGCTCA

1420 1430 1440 1450 1460 1470 1480 1490 1500  
 TCTGACAACACTATCAGATTATGGGACATAGAATGTGGTGCATGTTTACGAGTGTAGAAAGGCCATGAGGAATTGGTGGCTGTATTTCGATTTC

1510 1520 1530 1540 1550 1560 1570 1580 1590  
 ATAACAAGAGGATAGTCAGTGGGGCTATGATGGAAAAATTAAAGTGTGGGATCTTGTGGCTGCTTTGGACCCCGTCTCTGCAGGGACACT

1600 1610 1620 1630 1640 1650 1660 1670 1680 1690  
 CTGTCTACCGACCCCTTGTGGAGCATTCGGAAGAGTTTTTCGACTACAGTTTGATGAATTCAGATTGTCAGTAGTTCACATGATGACACAATC

1700 1710 1720 1730 1740 1750 1760 1770 1780  
 CTCATCTGGGACTTCCTAAATGATCCAGCTGCCCAAGCTGAACCCCCCGTTCCTCTCGAACATACACCTACATCTCCAGATAAATAACCA

1790 1800 1810 1820 1830 1840 1850 1860 1870 1880  
 TACACTGACCTCATACTTGCCAGGACCCATTAAAGTTGCGGTATTTAACGTATCTGCCAATACCAGGATGAGCAACAACAGTAACAATCAAAC

1890 1900 1910 1920 1930 1940 1950 1960 1970  
 TACTGCCAGTTTCCCTGGACTAGCCGAGGAGCAGGGCTTTGAGACTCCTGTTGGGACACAGTTGGTCTGCAGTGGGGCCAGGACGGTCTACTC

1980 1990 2000 2010 2020 2030 2040 2050 2060  
 AGCACAACCTGACTGCTTCAGTGTCTATCAGAAGATGTCTTCTATCAATGTGAATGATGGAACCTTTTAAACCTCCCTCCTCTCCTCTCTT

2070 2080 2090 2100 2110 2120 2130 2140 2150  
 CACCTCTGCACCTAGTTTTTCCATTGGTTCCAGACAAGGTGACTTATAAATATATTTAGTGTGTTTGCAGAAAAA

FIG. 3B

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10 20 30 40 50 60  
 MERKDFETWLDNISVTFLSLTDLQKNETLDHLISLSGAVQLRHLSNNLETLLKRDFLKL  
 70 80 90 100 110 120  
 PLELSFYLLKWLDLPQTLTCLLVSKQWNKVISACTEVWQTACKNLGWQIDDSVQDALHWK  
 130 140 150 160 170 180  
 KVYLKAILRMKQLEDHEAFETSSLIGH SARVYALYYKDGLLCTGSDDL SAKLWDVSTGQC  
 190 200 210 220 230 240  
 VYGIQTHTCAAVKFDEQKLV TGSFDNTVACWEWSSGARTQHFRGHTGAVFSVDYNDELDI  
 250 260 270 280 290 300  
 LVSGSADFTVKVWALSAGTCLNTLTGHTEWVTKVVLQKCKVKSL LHSPGDYILLSADKYE  
 310 320 330 340 350 360  
 IKIWPIGREINCKCLKTLSVSEDRSICLQRLHFDGKYIVCSSALGLYQWDFASYDILRV  
 370 380 390 400 410 420  
 IKTP EIANLALLGFGDIFALLFDNRYLYIMDLRTESLISRWPLPEYRESKRGSSFLAGEH

PG

FIG. 4A

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10 20 30 40 50 60 70 80 90  
ATGGAGAGAAAGGACTTTGAGACATGGCTTGATAACATTTCTGTTACATTTCTTTCTCTGACGGACTTGAGAAAAATGAAACTCTGGATCACC  
100 110 120 130 140 150 160 170 180  
TGATTAGTCTGAGTGGGGCAGTCCAGCTCAGGCATCTCTCCAATAACCTAGAGACTCTCCTCAAGCGGGACTTCTCTAAACTCTCTCCCTGGA  
190 200 210 220 230 240 250 260 270 280  
GCTCAGTTTTTATTGTTAAAAATGGCTCGATCCTCAGACTTTACTCACATGCTGCCTCGTCTCTAAACAGTGAATAAGGTGATAAGTGCTGT  
290 300 310 320 330 340 350 360 370  
ACAGAGGTGTGGCAGACTGCATGTAATAATTTGGGCTGGCAGATAGATGATTCTGTTTCTGAGGAGCTTTGCACTGGAAGAAGGTTTATTGAAGG  
380 390 400 410 420 430 440 450 460 470  
CTATTTTGAGAATGAAGCAACTGGAGGACCATGAAGCCTTTGAAACCTCGTCATTAATTGGACACAGTGCAGAGTGTATGCACTTTACTACAA  
480 490 500 510 520 530 540 550 560  
AGATGGACTTCTCTGTACAGGCTCAGATGACTTGTCTGCAAGCTGTGGGATGTGAGCACAGGGCAGTGCCTTTATGGCATCCAGACCCACACT  
570 580 590 600 610 620 630 640 650  
TGTGCAGCGGTGAAGTTTGATGAACAGAAAGCTTGTGACAGGCTCCTTTGACAACACTGTGGCTTGCTGGGAATGGAGTTCCGGAGCCAGGACCC  
660 670 680 690 700 710 720 730 740 750  
AGCACTTTCCGGGGCACACCGGGGCGGTATTTAGCGTGGACTACAATGATGAACCTGGATATCTTGGTGAGCGGCTCTGCAGACTTCACTGTGAA  
760 770 780 790 800 810 820 830 840  
AGTATGGGCTTTATCTGCTGGGACATGCCTGAACACACTCACCGGGCACACGGAATGGGTCAACCAAGGTAGTTTTCAGAAAGTCAAAGTCAAG  
850 860 870 880 890 900 910 920 930 940  
TCTCTCTTGACACAGTCTCTGGAGACTACATCTCTTAAGTGCAGACAAATATGAGATTAAGATTTGGCCAATTGGGAGAGAAATCAACTGTAAGT  
950 960 970 980 990 1000 1010 1020 1030  
GCTTAAAGACATTGTCTGTCTCTGAGGATAGAAGTATCTGCCTGCAGCCAAGACTTCATTTTGATGGCAAAATACATTGTCTGTAGTTCAGCACT  
1040 1050 1060 1070 1080 1090 1100 1110 1120  
TGGTCTCTACCAGTGGGACTTTGCCAGTTATGATATTCTCAGGGTCAATCAAGACTCCTGAGATAGCAAACTTGGCCTTGCTTGGCTTTGGAGAT  
1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
ATCTTTGCCCTGCTGTTTGACAACCGCTACCTGTACATCATGGAAGTTCGGGACAGAGAGCCTGATTAGTGGCTGGCCTCTGCCAGGTACAGGG  
1230 1240 1250 1260 1270 1280 1290 1300 1310  
AATCAAAGAGAGGCTCAAGCTTCTGGCAGGCGAATCCTGGCTGAATGGAAGTGGATGGGCACAATGACACGGGCTTGGTCTTTGCCACCAGC  
1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
ATGCCTGACCACAGTATTACCTGGTGTGTGGAAGGAGCAGGCTGACACCATGAGCCACCACCGCTGACTGACTTTGGGTGCCGGGGCTGCG  
1420 1430 1440 1450 1460 1470  
GGTTTTGGGTGCACCTCTGCCGACGGGACTGCATGAACCAAGTTCTCACCTAATGGTATCATCA

FIG. 4B

10 20 30 40 50 60  
 MKRGGRSDRNSSEEGTAEKSKLRTTNEHSQTCDWGNLLQDIILQVFKYLPPLDRAHAS  
 70 80 90 100 110 120  
 QVCRNWNQVFMPLWRCFEFELNQPATSYLKATHPELIKQIIKPHSNHLQVVSFKVDSS  
 130 140 150 160 170 180  
 KESAEAAACDILSQLVNCSLKTGLISTARPSFMDLPKSHFISALTVVVFVNSKSLSSLKID  
 190 200 210 220 230 240  
 DTPVDDPSLKVLVANNSDTLKLLKMSSCPHVSPAGILCVADQCHGLRELALNYHLLSDEL  
 250 260 270 280 290 300  
 LLALSSEKHVRLEHLRIDVVSSENPGQTHFHTIQSSWDAFIRHSPKVNLMYFFLYEEEF  
 310 320 330 340 350 360  
 DPFFRYEIPATHLYFGRSVSKDVLGRVGMTCPRLVELVVCANGLRPLDEELIRIAERCKN  
 370 380 390 400 410 420  
 LSAIGLGECEVSCSAFVEFVKMCGGRLSQLSIMEEVLPDQKYSLEQIHWEVSKHLGRVW  
 FPDMMPTW

FIG. 5A

CGGGGTGGTGTGTGGGGGAAGCCGCCCGGCGAGCAGGATGAAACGAGGAGGAAGAGATAGTGACCGTAATTCATCAGAAGAAGAACTGCAGA  
100 110 120 130 140 150 160 170 180  
GAAATCCAAGAACTGAGGACTACAAATGAGCATTCTCAGACTTGTGATTGGGGTAATCTCCTTCAGGACATTATTCTCCAAGTATTTAAATAT  
190 200 210 220 230 240 250 260 270 280  
TTGCCCTCTCTTGACCGGCTCATGCTTCACAAGTTTGGCCCACTGGAACCGGTATTTACATGCCTGACTTGTGGAGATGTTTTGAATTG  
290 300 310 320 330 340 350 360 370  
AACTGAATCAGCCAGCTACATCTTATTGAAAGCTACCCATCCAGAGCTGATCAACAGATTATTAAAGACATTCAAACCATCTACAATATGT  
380 390 400 410 420 430 440 450 460 470  
CAGCTTCAAGGTGGACAGCAGCAAGGAATCAGCTGAAGCAGCTTGTGATATACTATCGCAACTTGTGAATTGCTCTTTAAAAACACTTGGACTT  
480 490 500 510 520 530 540 550 560  
ATTTCAACTGCTCGACCAAGCTTTATGGATTTACCAAAGTCTCACTTTATCTCTGCACTGACAGTTGTGTTCTGTAAGTCCAAATCCCTGTCTT  
570 580 590 600 610 620 630 640 650  
CGCTTAAGATAGATGATACTCCAGTAGATGATCCATCTCTCAAAGTACTAGTGGCCCAACAATAGTGATACACTCAAGCTGTGAAAAATGAGCAG  
660 670 680 690 700 710 720 730 740 750  
CTGTCTCATGTCTCTCCAGCAGGTATCCTTTGTGTGGCTGATCAGTGTACGGCTTAAGAGAAGTACGCCCTGAACTACCACTTATTGAGTGAT  
760 770 780 790 800 810 820 830 840  
GAGTTGTACTTGCATTGTCTTCTGAAAAACATGTTGATTAGAACATTTGCGCATTTGATGTAGTCAGTGAGAATCCTGGACAGACACACTTCC  
850 860 870 880 890 900 910 920 930 940  
ATACTATTTCAGAAGAGTAGCTGGGATGCTTTTCATCAGACATTCACCCAAAGTGAACCTTAGTGATGTATTTTTTTTATGAAGAAGAAATTTGA  
950 960 970 980 990 1000 1010 1020 1030  
CCCCCTCTTTCCGTATGAAATACCTGCCACCCATCTGTACTTTGGGAGATCAGTAAGCAAAGATGTGCTTGGCCGTGTTGGGAATGACATGCCCT  
1040 1050 1060 1070 1080 1090 1100 1110 1120  
AGACTGGTTGAACTAGTAGTGTGCAAAATGGATTACGGCCACTTGATGAAGAGTTAATTCGCATTGCAGAACGTTGCAAAAATTTGTCAGCTA  
1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
TTGGACTAGGGGAATGTGAAGTCTCATGTAGTGCTTTGTTGAGTTTGTGAAGATGTGTGGTGGCCGCTATCTCAATTATCCATTATGGAAGA  
1230 1240 1250 1260 1270 1280 1290 1300 1310  
AGTACTAATTCCTGACCAAAAGTATAGTTTGGAGCAGATTCACTGGGAAGTGTCCAAGCATCTGGTAGGGTGTGTTTCCCGACATGATGCCC  
1320 1330 1340 1350 1360 1370 1380 1390 1400  
ACTTGGTAAAAACTGCATGATGAATAGCACCTTAATTTCAAGCAAATGTATTATAATTAAAGTTTATTGCTGTAAAAA

FIG. 5B



10 20 30 40 50 60  
MKRNSLSVENKIVQLSGAAKQPKVGFYSSLNQTHHTVLLDWGSLPHHVVLQIFQYLPLL  
70 80 90 100 110 120  
DRACASSVCRRWNEVFHISDLWRKFELNQSATSSFKSTHPDLIQQIIKKHFAHLQYVS  
130 140 150 160 170 180  
FKVDSSAESAEACDILSQLVNCSIQTLGLISTAKPSFMNVSESHFVSALTVVFINSKSL  
190 200 210 220 230 240  
SSIKIEDTPVDDPSLKILVANNSDTLRLPKMSSCPHVSSDGILCVADRCQGLRELALNYY  
250 260 270 280 290 300  
ILTDELFLALSSETHVNLEHLRIDVVSENPGQIKFHAVKKHSDALIKHSPRVNVVMHFF  
310 320 330 340 350 360  
LYEEEFETFFKEETPVTHLYFGRSVSKVVLGRVGLNCPRLIELVVCANDLQPLDNELICI  
370 380 390 400 410 420  
AEHCTNLTA GLSKCEVSCSAFIRFVRLCERRLTQLSVMEEVLPDEDYSLDEIHTEVSK  
430  
YLGRVWFDPVMPLW

FIG. 6A

10 20 30 40 50 60  
ACATTTTCTAATGTTTACAGAATGAAGAGGAACAGTTTATCTGTTGAGAATAAAATTGTCCAGTTGTCA  
70 80 90 100 110 120 130  
GGAGCAGCGAAACAGCCAAAAGTTGGGTTCTACTCTTCTCTCAACCAGACTCATAACACACACGGTTCTT  
140 150 160 170 180 190 200  
CTAGACTGGGGGAGTTTGCCTCACCATGTAGTATTACAAATTTTTCAGTATCTTCTCTTACTAGATCGG  
210 220 230 240 250 260 270  
GCCTGTGCATCTTCTGTATGTAGGAGGTGGAATGAAGTTTTTCATATTTCTGACCTTTGGAGAAAAGTTT  
280 290 300 310 320 330 340  
GAATTTGAAGTGAACAGTCAGCTACTTCATCTTTTAAGTCCACTCATCTGATCTCATTGAGCAGATC  
350 360 370 380 390 400 410  
ATTAAAAAGCATTTTGTCTCATCTTCAGTATGTCAGCTTTAAGGTTGACAGTAGCGCTGAGTCAGCAGAA  
420 430 440 450 460 470 480  
GCTGCCTGTGATATACTCTCTCAGCTGGTAAATGTTCCATCCAGACCTTGGGCTTGATTTCAACAGCC  
490 500 510 520 530 540 550  
AAGCCAAGTTTCATGAATGTGTCGGAGTCTCATTTTGTGTCAGCACTTACAGTTGTTTTTATCAACTCA  
560 570 580 590 600 610 620  
AAATCATTATCATCAATCAAAATTGAAGATACACCAGTGGATGATCCTTCATTGAAGATTCTTGTGGCC  
630 640 650 660 670 680 690  
AATAATAGTGACACTCTAAGACTCCCAAAGATGAGTAGCTGTCTCATGTTTCATCTGATGGAATCTT  
700 710 720 730 740 750  
TGTGTAGCTGACCGTTGTCAAGGCCTTAGAGAACTGGCGTTGAATTATTACATCCTAACTGATGAAGTT  
760 770 780 790 800 810 820  
TTCCTTGCACTCTCAAGCGAGACTCATGTTAACCTTGAACATCTTCGAATTGATGTTGTGAGTGAAGTT  
830 840 850 860 870 880 890  
CCTGGACAGATTAAATTTTCATGCTGTTAAAAACACAGTTGGGATGCACTTATTAAACATTCCCCTAGA  
900 910 920 930 940 950 960  
GTTAATGTTGTTATGCACTTCTTCTATATGAAGAGGAATTCGAGACGTTCTTCAAAGAAGAAACCCCT  
970 980 990 1000 1010 1020 1030  
GTTACTCACCTTTATTTTGGTCGTTTCAGTCAGCAAGTGGTTTTAGGACGGGTAGGTCTCAACTGTCCT  
1040 1050 1060 1070 1080 1090 1100  
CGACTGATTGAGTTAGTGGTGTGCTAATGATCTTCAGCCTCTTGATAATGAAGTTATTTGTATTGCT  
1110 1120 1130 1140 1150 1160 1170  
GAACACTGTACAAACCTAACAGCCTTGGGCCTCAGCAAATGTGAAGTTAGCTGCAGTGCCTTCATCAGG  
1180 1190 1200 1210 1220 1230 1240  
TTTGTAAAGACTGTGTGAGAGAAGGTTAACACAGCTCTCTGTAATGGAGGAAGTTTGTATCCCTGATGAG  
1250 1260 1270 1280 1290 1300 1310  
GATTATAGCCTAGATGAAATTCACACTGAAGTCTCCAAATACCTGGGAAGAGTATGGTTCCCTGATGTG  
1320  
ATGCCTCTCTGG

FIG. 6B

202070 244 010702

10 20 30 40 50 60  
MAGSEPRSGTNSPPPPFSDWGRLEAAILSGWKTFWQSVSKDRVARTTSREEVDEAASTLT  
70 80 90 100 110 120  
RLPIDVQLYILSFLSPHDLCLGSTNHYWNETVRNFIWRYFLLRDLPSWSSVDWKSPLY  
130 140 150 160 170 180  
LQILKKPISEVSDGAFFDYMAVYLMCCPYTRRASKSSRPMYGAVTSFLHSLIIPNEPRFA  
190 200 210 220 230 240  
LFGPRLEQLNTSLVLSLLSSEELCPTAGLPQRQIDGIGSGVNFQLNNQHKFNILILYSTT  
250 260 270 280 290 300  
RKERDRAREEHTSAVNKMF SRHNEGDDRPGSRYSVIPQIQKLCEVVDGFIYVANAIAHKKR  
310 320 330 340 350 360  
HEWQDEF SHIMAMTDPAFGSSGRPLLVLSCISQGDVKRMPCFYLAHELHLNLLNHPWLVO  
370 380 390 400 410 420  
DTEAETLTGFLNGIEWILEEVESKRAR\*FSFQILGTETI\*NLLRS\*CEYLLSQPTLSCL  
430 440 450 460 470 480  
FADRLSFGQL\*LLCFLYYFYFLP\*INYKKRVSVLVFSPKMNL\*TFFW\*FLYFLSF\*KY\*I

L

FIG. 7A

10 20 30 40 50 60  
ATGGCGGGAGCGAGCCGCGCAGCGGAACAAATTCGCCGCCGCCGCCCTTCAGCGACTGGGGCCGCTG

70 80 90 100 110 120 130  
GAGGCGGCCATCCTCAGCGGCTGGAAGACCTTCTGGCAGTCAGTGAGCAAGGATAGGGTGGCGGTACG

140 150 160 170 180 190 200  
ACCTCCCGGGAGGAGGTGGATGAGCGGCCAGCACCTGACCGCGGTGCCGATTGATGTACAGCTATAT

210 220 230 240 250 260 270  
ATTTTGTCTTTCTTTACCTCATGATCTGTGTCAGTTGGGAAGTACAAATCATTATTGGAATGAAACT

280 290 300 310 320 330 340  
GTAAGAAATCCAATCTGTGGAGATACTTTTGTGTGAGGGATCTTCTTCTTGGTCTTCTGTGTGACTGG

350 360 370 380 390 400 410  
AAGTCTCTTCCATATCTACAAATCTTAAAAAGCCTATATCTGAGGTCTCTGATGGTGCATTTTGTGAC

420 430 440 450 460 470 480  
TACATGGCAGTCTATCTAATGTGCTGTCCATACACAAGAAGAGCTTCAAAATCCAGCCGCTCTATGTAT

490 500 510 520 530 540 550  
GGAGCTGTCACTTCTTTTACACTCCCTGATCATTTCCCAATGAACCTCGATTGTCTCTGTTTGGACCA

560 570 580 590 600 610 620  
CGTTTGAACAATGAATACCTCTTTGGTGTGAGCTTGTCTTTCAGAGGAACCTTGGCCCAACAGCT

630 640 650 660 670 680 690  
GGTTTGCCCTCAGAGGCAGATTGATGGTATTGGATCAGGAGTCAATTTTCAGTTGAACAACCAACATAAA

700 710 720 730 740 750  
TTCAACATTCTAATCTTATATTCAACTACCAGAAAGGAAAGAGATAGAGCAAGGGAAGAGCATACAAGT

760 770 780 790 800 810 820  
GCAGTTAACAAGATGTTCACTGACACAATGAAGGTGATGATCGACCAGGAAGCCGTACAGTGTGATT

830 840 850 860 870 880 890  
CCACAGATTCAAAAACCTGTGTGAAGTTGTAGATGGGTTTCATCTATGTTGCAATGCTGAAGCTCATAAA

900 910 920 930 940 950 960  
AGACATGAATGGCAAGATGAATTTTCTCATATTATGGCAATGACAGATCCAGCCTTTGGGTCTTCGGGA

970 980 990 1000 1010 1020 1030  
AGACCATTGTGGTTTTATCTTGTATTCTCAAGGGGATGTAAGAAGAAATGCCCTGTTTTATTGCGCT

1040 1050 1060 1070 1080 1090 1100  
CATGAGCTGCATCTGAATCTTCTAAATCACCCATGGCTGGTCCAGGATACAGAGGCTGAACTCTGACT

1110 1120 1130 1140 1150 1160 1170  
GGTTTTTTGAATGGCATTGAGTGGATTCTTGAAGAAGTGGAAATCTAAGCGTGCAAGATGATTCTCTTTT

1180 1190 1200 1210 1220 1230 1240  
CAGATCTTGGGAACTGAAACATTGAAATTTATTACTAAGGTCGTGATGTGAATATTGTCTCAGTCAG

1250 1260 1270 1280 1290 1300 1310  
CCCACCTTGTCTGCCCTTTTTCAGATAGGCTTTCATTGACAGCTATAACTGCTGTGTTTTTATAT

1320 1330 1340 1350 1360 1370 1380  
TATTTTTACTTTTTTACCATAAATCAATTACAAGAAAAGAGTTTCAGTCCTAGTATTTAGCCCCAAAATG

1390 1400 1410 1420 1430 1440  
AACCTTTAAACATTTTTTGGTAATTTTTATATTTCTGTCTTTTTAAAAATATTAATTTTGG

FIG. 7B

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10 20 30 40 50 60  
MSRRPCSCALRPPRCSCSASPSAVTAAGRPRPSDSCKEESSTLSVKMKCDFNCNHVHSGL

70 80 90 100 110 120  
KLVKPDDIGRLVSYTPAYLEGCKDCIKDYERLSCIGSPIVSPRIVQLETESKRLHNKEN

130 140 150 160 170 180  
QHVQQTILNSTNEIEALETSLRYEDSGYSSFSLQSGLEHEEGSLLEENFGDSLQSCLLQI

190 200 210 220 230 240  
QSPDQYPNKNLLPVLHFEKVVCSTLKKNAKRNPKVDREMLKEIIARGNFRQLQNIIGRKM

250 260 270 280 290 300  
LECVDILSELFRRGLRHVLATILAQLSDMDLINVSKVSTTWKKILEDDKGAFLYKAIQ

310 320 330 340 350 360  
RVTENNNKFSPHASTREYVMFRTPLASVQKSAAQTSKKDAQTKLSNQGDQKGSTYSRHN

370 380 390 400 410 420  
EFSEVAKTLKKNESLKACIRCNSPAKYDCYLQRATCKREGCGFDYCTKCLCNHYHTTKDCS

430 440  
DGKLLKASCKIGPLPGTKKSKKNLRRL

FIG. 8A

10 20 30 40 50 60 70 80 90  
AGGTTGCTCAGCTGCCCCCGGAGCGGTTCTCCACCTGAGGCAGACACCACCTCGGTTGGCATGAGCCGGCGCCCCGTCAGCTGCGCCCTACGG  
100 110 120 130 140 150 160 170 180  
CCACCCCGCTGCTCCTGCAGCGCCAGCCCCAGCGCAGTGACAGCCGCGGGCGCCCTCGACCCCTCGGATAGTTGTAAAGAAAGAAAGTTCTACCC  
190 200 210 220 230 240 250 260 270 280  
TTTCTGTCAAAATGAAGTGTGATTTTAAATTGTAACCATGTTTCATTCGCGACTTAAACTGGTAAACCTGATGACATGGAAGACTAGTTTCCTA  
290 300 310 320 330 340 350 360 370  
CACCCCTGCATATCTGGAAGGTTCTGTAAAGACTGCATTAAGACTATGAAAGGCTGTCTATGTTGGGTACCGATTGTGAGCCCTAGGATT  
380 390 400 410 420 430 440 450 460 470  
GTACAACTTGAAGCTGAAGCAAGCGCTTGCCATAAAGGAAATCAACATGTGCAACAGACACTTAATAGTACAAATGAAGTAGAAGCACTAG  
480 490 500 510 520 530 540 550 560  
AGACCAGTAGACTTTATGAAGACAGTGGCTATTCTCTCATTTTCTCTACAAAGTGGCTCAGTGAACATGAAGAAGGTAGCCCTCTGGAGGAGAA  
570 580 590 600 610 620 630 640 650  
TTTGGGTGACAGTCTACAATCTCTGCTGCTACAAATACAAAGCCAGACCAATATCCCAACAAAACCTTGCTGCCAGTTCTTTCATTTTGAAAAA  
660 670 680 690 700 710 720 730 740 750  
GTGGTTTGTTCACATTAAAAAAGAAATGCAAAACGAAATCTTAAAGTAGATCGGGAGATGCTGAAGGAAATTTATAGCCAGAGGAAATTTTAGAC  
760 770 780 790 800 810 820 830 840  
TGCAGATATAATTCGAGAAAAATGGCCCTAGAAATGTGTAGATATTCTCAGCGAACTCTTTCGAAGGGGACTCAGACATGTCTTAGCAACTAT  
850 860 870 880 890 900 910 920 930 940  
TTTAGCACAACCTCAGTGACATGGACTTAATCAATGTGTCTAAAGTGAGCACAACCTTGAAGAAGATCTAGAAAGATGATAAGGGGGCATTCCAG  
950 960 970 980 990 1000 1010 1020 1030  
TTGTACAGTAAAGCAATACAAAGAGTTACCGAAAAACAATAAAATTTACCTCATGCTTCAACCAGAGAATATGTTATGTTTCAAGACCCAC  
1040 1050 1060 1070 1080 1090 1100 1110 1120  
TGGCTTCTGTTTCAAGAAATCAGCAGCCAGACTTCTCTCAAAAAAGATGCTCAAAACCAAGTTATCCAATCAAGGTGATCAGAAAGGTTCTACTTA  
1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
TAGTCGACACAATGAATTCTCTGAGGTTGCGCAAGACATTGAAAAAGAACGAAAGCCTCAAAGCCTGTATTGCTGTAAATTCACCTGCAAAATAT  
1230 1240 1250 1260 1270 1280 1290 1300 1310  
GATTGCTATTTACAACGGGCAACCTGCAAAACGAGAAGGCTGTGGATTGATTATTGTACGAAGTGCTCTGTAAATATCATACTACTAAAGACT  
1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
GTTTCAGATGGCAAGCTCTCTCAAGCCAGTTGTAAATAGGTCCCTGCTGCTGACAAAGAAAGCAAAAGAAATTTACGAAGATTGTGATCTCT  
1420 1430 1440 1450 1460 1470 1480 1490 1500  
TATTAAATCAATTGTTTACTGATCATGAATGTTAGTTAGAAAAATGTTAGGTTTAACTTAAAAAAATGTTATTGTGATTTTCAATTTTATGTTG  
1510 1520 1530 1540 1550 1560 1570 1580 1590  
AAATCGGTGTAGTATCTCTGAGGTTTTTTTCCCCCAGAAAGATAAAGAGGATAGACAACCTCTTAAATATTTTACAATTTAATGAGAAAAAGT  
1600 1610 1620 1630 1640 1650 1660 1670 1680 1690  
TTAAATTTCTCAATACAAATCAACAATTTAAATATTTTAAAGAAAAAGGAAAGTAGATAGTGATACTGAGGGTAAAAAAATTTGATTCAA  
1700 1710 1720 1730 1740 1750 1760 1770 1780  
TTTTATGCTAAAGGAAACCATGCAATTTTACCTAGACAGTCTTAAATATGTCTGGTTTTCCATCTGTTAGCATTTTCAGACATTTTATGTTCTT  
1790 1800 1810 1820 1830 1840 1850 1860 1870 1880  
CTTACTCAATTGATACCAACAGAAATATCAACTTCTGGAGTCTATTAAATGTGTTGTACCTTTCTAAAGCTTTTTTTCATTGTGTGTTATTTCC  
1890 1900 1910 1920 1930 1940 1950 1960 1970  
CAAGAAAGTATCCTTTGTAAAAACTTGCTTGTGTTTTCTTATTTCTGAAATCTGTTTTAATATTTTGTATACATGTAATATTTCTGTATTTT  
1980 1990 2000 2010 2020 2030 2040 2050 2060  
TATATGTCAAAGAATATGTCTCTTGTATGTACATATAAAAAATTTTCTCAATAAAATGTAAAGCTTAAAAAAATTTTAACTCGAG

2070  
ACTAGTGC

FIG. 8B

10 20 30 40 50 60  
ARSGASALRRRRVQVWVLSRPPPGGGDSFRTRRPQRGPGPGGSQAMDAPHSKAALDSINE  
70 80 90 100 110 120  
LPDNILLELFTHVPAQQLLNCRSLVCSLWRDLIDLLTLWKRKCLRKGFEITKDWDQPVADW  
130 140 150 160 170 180  
KIFYFLRSLHRNLLRNPCAENDMFAWQIDFNGGDRWKVDSLPGAHGTEFPDPKVKKSFVT  
190 200 210 220 230 240  
SYELCLKWELVDLLADRYWEELDTFRPDIVVKDWFAARADCGCTYQLKVQLASADYFVL  
250 260 270 280 290 300  
ASFEPPTVTIQQWNNATWTEVSYTFSDYPRGVRYILFQHGGRDTQYWAGWYGPRVTNSSI  
310 320 330  
VVSPKMTRNQASSEAQPGQKHGQEEAAQSPYGAVVQIF

FIG. 9A

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10 20 30 40 50 60 70 80 90  
GGCGCTTCGGGAGCTTCGGCCCTGCGTAGGAGCGGGTGCAGGTGTGGGTGCTGAGCCGCCCGCCGCTGGAGGGGAGACAGCTTCAGGACAC  
100 110 120 130 140 150 160 170 180  
GCAGGCCGAGCGAGGGCCCCGGGGGATCCAGGCCATGGACGCTCCCAAGCAGCCCTGGACAGCATTAAAGAGCTGCCCCGA  
190 200 210 220 230 240 250 260 270 280  
TAACATCTGCTGGAGCTGTTACGCACGTGCCCGCCCGCCAGCTGCTGCTGAAGTCCCGCTGGTCTGCAGCCTCTGGCGGGACCTCATCGAC  
290 300 310 320 330 340 350 360 370  
CTCCTGACCCCTCTGGAACGCAAGTGCTGCGAAAGGGCTTCATCAACCAAGACTGGGACCAGCCCGTGGCCGACTGGAAAATCTTCTACTTCC  
380 390 400 410 420 430 440 450 460 470  
TACGGAGCCTGCATAGGAACCTCTGCGCAACCCGCTGTGCTGAAAACGATATGTTTGCATGGCAAATTGATTTCATGGTGGGGACCGCTGGAA  
480 490 500 510 520 530 540 550 560  
GGTGGATAGCTCCCTGGAGCCACGGGACAGAATTTCTGACCCCAAGTCAAGAAGTCTTTTGTACATCCTACGAAGTGTGCTCAAGTGG  
570 580 590 600 610 620 630 640 650  
GAGCTGGTGGACCTCTAGCCGACCGCTACTGGGAGGAGCTACTAGACACATTCCGGCCGACATCGTGGTTAAGGACTGGTTTGTGCCAGAG  
660 670 680 690 700 710 720 730 740 750  
CCGACTGTGGCTGCACCTACCAACTCAAAGTGCAGCTGGCCCTCGGCTGACTACTTCGTGTTGGCCCTCCTTCGAGCCCCACCTGTGACCATCCA  
760 770 780 790 800 810 820 830 840  
ACAGTGAACAAATGCCACATGGACAGAGGTCTCTACACCTTCTCAGACTACCCCCGGGGTGTCCGCTACATCCTCTTCCAGCATGGGGGAGG  
850 860 870 880 890 900 910 920 930 940  
GACACCCAGTACTGGGAGGCTGGTATGGGCCCCGAGTCAACACAGCAGCATTTGTCGTCAGCCCCAAGATGACCAGGAACAGGCCTCGTCCG  
950 960 970 980 990 1000 1010 1020 1030  
AGGCTCAGCCTGGGCAGAAGCATGGACAGGAGGAGGCTGCCCAATCGCCCTACGGAGCTGTTGTCCAGATTTTCTGACAGCTGTCCATCCTGTG  
1040 1050 1060 1070 1080 1090 1100 1110 1120  
TCTGGGTGAGCCAGAGGTTCTCCAGGCAGGAGCTGAGCATGGGGTGGGAGTGGGCTCCCTGTACCAGCGACTCCTGCCCGGTTCAACCCTA  
1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
CCAGCTTGTGGTAACTTACTGTACATAGCTCTGACGTTTGTGTAATAAATGTTTTCAGGCCGGGCACTGTGGCTCAGCCTGTAATCCAG  
1230 1240 1250 1260 1270 1280 1290 1300 1310  
CACITTTGGGAGACCGAGGCAGGTGGATCAGGAGTCAAGAGACAGAGACCATCTGGCCAAACACGGTGAAACCTGTCTCTACTAAAAATACAA  
1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
AAAATTAGCCGGGCGTGGTGGCGGGCGCTGTAGTCCAGCTACTCGGGAGGCTGATGCAGAAGAATGGCGTGAACCCGGAAGGCAGAGCTTGC  
1420 1430 1440 1450 1460 1470 1480 1490 1500  
AGTGAGCCGAGATCAGCCACTGCACTCCAGCCTGGGTGACAGAGCGAGACTCTGGCTCATAAAATAATAATAATAATAATAATAATAATA  
1510 1520 1530  
AATGGTTTTCAGTAAAAAAAAAAAAAAAAAAAA

FIG. 9B

10042447.010702



10 20 30 40 50 60  
 MSNTRFTITLNYKDPLTGDEETLASYGIVSGDLICLILHDDIPPPNIPSSSTDSEHSSLQN  
 70 80 90 100 110 120  
 NEQPSLATSSNQTSIQDEQPSDSFQGQAAQSGVWNDDSMGLGPSQNFEAESIQDNAHMAEG  
 130 140 150 160 170 180  
 TGFYPSEPLLCSESVEGQVPHSLETLYQSADCSANDALIVLIHLLMESGYIPQGTEAK  
 190 200 210 220 230 240  
 ALSLPEKWKLSGVYKLQYMHHLCEGSSATLTCVPLGNLIVVNATLKINNEIRSVKRLQLL  
 250 260 270 280 290 300  
 PESFICKEKLGENVANIYKDLQKLSRLFKDQLVYPLLAFTQALNLPNVFGLVVLPLELK  
 310 320 330 340 350 360  
 LRIFRLLDVRSVLSLSAVCRDLFTASNDPLLWRFLYLRFDRDNTVRVQDQDWKELYRKRH  
 370 380 390 400 410 420  
 IQRKESPKGRFVLLLPSSTHTIPFYPNPLHPRFPSSRLPPGIIGGEYDQRPTLPYVGDP  
 430 440 450 460 470 480  
 ISSLIPGPGETPSQLPPLRPRFDPVGPLPGPNPILPGRGGPNDRFPFRPSRGRPTDGRLS

FM

FIG. 10A

10042417-010702

10 20 30 40 50 60 70 80 90  
TGGAAATCCCATGGACCATGTCTAATACCCGATTGTACAATTACATTGAACTACAAGGATCCCCCTCACTGGAGATGAAGAGACCTTGGCTTCATA

100 110 120 130 140 150 160 170 180  
TGGGATTGTTTCTCGGGGACTTGATATGTTTGTATTCTTCACGATGACATTCCACCGCCTAATATACCTTCATCCACAGATTTCAGAGCATTCTTCA

190 200 210 220 230 240 250 260 270 280  
CTCCAGAACAATGAGCAACCCCTCTTTGGCCACCAGCTCCAATCAGACTAGCATAACAGGATGAACAACCAAGTGATTTCATCCAGGACAGGCAG

290 300 310 320 330 340 350 360 370  
CCCAGTCTCGTGTTTTGGAAATGACGACAGTATGTTAGGGCCTAGTCAAAATTTTGAAGCTGAGTCAATTCAAGATAATGGCCATATGGCAGAGGG

380 390 400 410 420 430 440 450 460 470  
CACAGGTTTCTATCCCTCAGAACCCTGCTCTGTAGTGAATCGGTGGAAGGGCAAGTGCCACATTTCATTAGAGACCTTGTATCAATCAGCTGAC

480 490 500 510 520 530 540 550 560  
TGTTCTGATGCCAATGATGCGTTGATAGTGTGTGATACATCTTCTCATGTTGGAGTCAGGTTACATACCTCAGGGCACCAGCCAAAGCAACTGT

570 580 590 600 610 620 630 640 650  
CCCTGCCGGGAGAAGTGGAAGTTGAGCGGGGTGTATAAGCTGCAGTACATGCATCTCTGCGAGGGCAGCTCCGCTACTCTCACTGTGTGCC

660 670 680 690 700 710 720 730 740 750  
TTTGGGAAACCTGATTGTTGTAAATGCTACACTAAAAATCAACAATGAGATTAGAAGTGTAAGGATGTCAGCTGCTACCAGAATCTTTTATT

760 770 780 790 800 810 820 830 840  
TGCAAAGAGAACTAGGGGAAAATGTAGCCAAACATATACAAAGATCTTCAGAAACTCTCTCGCCTCTTTAAAGACCAGCTGGTGTATCCTCTTC

850 860 870 880 890 900 910 920 930 940  
TGGCTTTTACCCGACAAGCACTGAACCTACCAAATGATTTTGGGTGGTCTGCTCCTCCATTGGAAGTGAAGTACGGAATCTTCGACTTCTGGA

950 960 970 980 990 1000 1010 1020 1030  
TGTTCTGTTCCGTCTGTCTTTGTCTGCGGTTTGTCTGTGACCTCTTTACTGCTTCAAATGACCCACTCCTGTGGAGGTTTATATCTGCGTGAT

1040 1050 1060 1070 1080 1090 1100 1110 1120  
TTTCGAGACAATACTGTCTAGAGTTCAAGACACAGATTGGAAGAACTGTACAGGAAGAGGCACATACAAAGAAAAGAAATCCCCGAAAGGGCGGT

1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
TTGTGCTGCTCCTGCCATCGTCAACCCACACCAATTCCATTCTATCCCAACCCCTTGCAACCCTAGGCCATTTCCTAGCTCCCGCCTTCCTCCAGG

1230 1240 1250 1260 1270 1280 1290 1300 1310  
AATTATCGGGGGTGAATATGACCAAAGACCAACACTTCCTATGTTGGAGACCAATCAGTTCACTCATTCTGCTGGCTGGGGAGACGCCCAGC

1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
CAGTTACCTCCACTGAGACCAGCGTTTGATCCAGTTGGGCCACTTCAGGACCTAACCCCATCTTGCCAGGGCGAGGCGGCCCAATGACAGAT

1420 1430 1440 1450 1460 1470 1480 1490 1500  
TTCCCTTTAGACCCAGCAGGGGTGCGGCAACTGATGGCCGCTGTCAATTATGTGATTGATTGTAATTTTCATTTCTGGAGCTCCCAATTTGTTTT

1510 1520 1530 1540 1550 1560 1570 1580 1590  
TGTTTCTAAACTACAGATGTCACTCCTTGGGGTGCTGATCTCGAGTGTTATTTTCTGATTGTGGTGTGAGAGTTGCACTCCAGAAACCTTTT

1600 1610 1620 1630 1640 1650 1660 1670 1680 1690  
AAGAGATACATTTATAGCCCTAGGGGTGGTATGACCCAAAGGTTCTCTGTGACAAGGTTGGCCCTTGGGAATAGTTGGCTGCCAATCTCCCTGC

1700 1710 1720 1730 1740 1750 1760  
TCTTGGTTCTCCTCTAGATTGAAGTTTGTCTTCTGATGCTGTTCTTACCAGATTAAAAAAAAGTGTAATT

**FIG. 10B**

10 20 30 40 50 60  
 ETSKLG\*SAVLAPAAGGTLSSSEGRSAVSGILIAVTSTGVDK\*SLNQLLHGLGTSSRLSHF  
 70 80 90 100 110 120  
 PFG\*KSPPRGQFVAAAVEIAGRSGLQMGQGLWRVVRNQQLQQEGYSEQGYLTREQSRRMA  
 130 140 150 160 170 180  
 ASNISNTNHRKQVQGGIDYHLLKARKSKEQEGFINLEMLPPELSFTILSYLNATDLCLA  
 190 200 210 220 230 240  
 SCVWQDLANDELLWQGLCKSTWGHCSIYNKNPPLGFSFRKXYMQLDEGSLTFNANPDEGV  
 250 260 270 280 290 300  
 NYFMSKGILDDSPKEIAKFIFCTRTLNWKKLRIYLDERRDVLDDLVTLHNFNRNQFLPNAL  
 310 320 330 340 350 360  
 REFFRHIHAPEERGEYLETLITKFSHRFCACNPDLRELGLSPDAVYVLCYSLILLSIDL  
 370 380 390 400 410 420  
 TSPHVKNKMSKREFIRNTRRAAQNISEDFVGHLYDNIYLIHVAA\*KAQLLGLQFLLQTK  
 430 440 450 460 470 480  
 ATQGLSRYGGYISAGHCSLSIQSSFSVQPFLLPFSILVISLGN\*IILQNFS\*FCLSRFA  
 490 500 510 520 530 540  
 QSRATV\*HSC\*RMIN\*HYTLKDGVFVH\*ICLKNFIHFHSLYKYHVMCTYLTKEIYSHNYF  
 550 560 570 580 590 600  
 IVKILTKVFPFLSN\*VLKFI\*F\*SETIVXVKVRSDFRQKPIPASFSFKL\*RVLICYYITM  
 610 620 630 640 650  
 QNWQLFL\*YKFII\*FFILKTGLIKSR\*VL\*TI\*DF\*NIKIYDLHS\*E\*NKIXLELW

FIG. 11A

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10 20 30 40 50 60 70 80 90  
GGAAACGTCAAAATTGGGATAGTCGGCAGTTCTGGCCCCCTGCAGCTGGAGGTACCCCTGAGTTCTGAGGGTCGTAGTGCTTTCTGGTATTCTC  
100 110 120 130 140 150 160 170 180  
ATCGCGGTACCTCTACCGGTGTGGACAAGTAAAGTTTGAATCAGCTTCTCCATGGCCTGGGCACCAAGTTCCCGGCTGAGCCATTTCCTTTTG  
190 200 210 220 230 240 250 260 270 280  
GCTAAAGTCCCCGCCAGAGGCCAATTCTGTCGGCGCGCGGTGGAGATGCGAGGTGCTCAGGCTTGAGATGGGTCAAGGGTTGTGGAGAGT  
290 300 310 320 330 340 350 360 370  
GGTCAGAAACAGCAGCTGCAACAAGAGGCTACAGTGAGCAAGGCTACCTCACCAGAGAGCAGAGCAGGAGAAATGGCTGCGAGCAACATTTCT  
380 390 400 410 420 430 440 450 460 470  
AACACCAATCATCGTAAACAAGTCCAAGGAGGCATTGACATATATCATCTTTTGAAGCAAGGAAATCGAAGAACAGGAAGGATTCATTAATT  
480 490 500 510 520 530 540 550 560  
TGGAAATGTTGCCCTCTGAGCTAAGCTTTACCATCTTGTCTACCTGAATGCAACTGACCTTTGCTTGGCTTCATGTGTTTGGCAGGACCTTGC  
570 580 590 600 610 620 630 640 650  
GAATGATGAACCTTCTCTGGCAAGGGTTGTGCAAAATCCACTTGGGGTCACTGTTCCATATACAATAAGAACCACCTTTAGGATTTCTTTTAGA  
660 670 680 690 700 710 720 730 740 750  
AAAKTGTATATGCACTGGATGAAGGCAGCCTCACCTTTAATGCCAACCCAGATGAGGGAGTGAACCTACTTTATGTCCAAGGGTATCCTGGATG  
760 770 780 790 800 810 820 830 840  
ATTGCCCAAAGGAAATAGCAAAGTTTATCTTCTGTACAAGAACAATAAATGGAAGAACTGAGAATCTATCTTGATGAAAGGAGAGATGTCTT  
850 860 870 880 890 900 910 920 930 940  
GGATGACCTGTAAACATTGCATAATTTAGAAATCAGTTCTTGCCAAATGCACTGAGAGAATTTTTTCGTATATCCATGCCCTGAAGAGCGT  
950 960 970 980 990 1000 1010 1020 1030  
GGAGAGTATCTTGAAACTTTATAACAAGTTCTCACATAGATTCTGTGCTTGCAACCCGATTTAATGCGAGAAGTTGGCCTTAGTCTGATG  
1040 1050 1060 1070 1080 1090 1100 1110 1120  
CTGTCTATGTACTGTGCTACTCTTTGATTCTACTTTCCATTGACCTCACTAGCCCTCATGTGAAGAATAAAATGTCAAAAAGGGAATTTATTCG  
1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
AAATACCCGTCGCGCTGCTCAAAATATTAGTGAAGATTTTGTAGGCCATCTTTATGACAATATCTACCTTATGGCCATGTGGCTGCATAAAA  
1230 1240 1250 1260 1270 1280 1290 1300 1310  
GCACAATTGCTAGGACTTCAGTTTCTTACTTCAGACTAAAGCTACCCAAGGACTTAGCAGATATGGGGTTACATCAGTGCTGGTCAATTGTAGCC  
1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
TGAGTATACAATCAAGCTTCAGTGTCACCTTTTTTCTTTTGGCCATTTCTATTTTAGTAATTTCTTGGGAACTAAATAATTTTGCAGAA  
1420 1430 1440 1450 1460 1470 1480 1490 1500  
TTTTTCCTAATTTTGTATACAGTTTTCACAAAGCAGAGCCACTGTCTAACACAGCTGTTAACGAATGATAAACTGACATTATACTCTAAAA  
1510 1520 1530 1540 1550 1560 1570 1580 1590  
GATGGTGTATTGTGCATTAGATTTCCTGAAAACTTTATCCATTTCCTTTTATACAAATACCATGTAATGTGTACATATTTAACTAAAG  
1600 1610 1620 1630 1640 1650 1660 1670 1680 1690  
AGATTTATAGTCATAATTATTTATTGTAAAGATTTTAACTAAAGTTTTCCTTTTCTCTCAAAGTCTGAAATTTATTTGATTCTGATC  
1700 1710 1720 1730 1740 1750 1760 1770 1780  
TGAAACTATTGTCTYCGTAAAGTTAGATCTGACTTCAGRCAGAAACCAATACCAGCTTCTTTTCTTTTAACTTTGAAGAGTGTGATTGTG  
1790 1800 1810 1820 1830 1840 1850 1860 1870 1880  
TACTATATTACTATGCAAACTGGCAGTTATTTTATAATATAAATTTATAATTTGATTTTATTTTAAAACTGGGTAAATCAAGTCTCGGT  
1890 1900 1910 1920 1930 1940 1950 1960 1970  
AAGTCCTTTAAACCATTTAGGATTTTAAAAACATCAAAATTTATGATTTACATTCATAGGAATAAAATAAATATYATTAGAACTCTGGT

FIG. 11B

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10	20	30	40	50	60
MAAAVDSAMEVVPALAEBAPEVAGLSCLVNLPGEVLEYILCCGSLTAADIGRVSSTCR					
70	80	90	100	110	120
RLRELCQSSGKVVKEQFRVRWPSLMKHYSPTDYVNWLEEKVRQKAGLEARKIVASFSCR					
130	140	150	160	170	180
FFSEHVPCNGFSDIENLEGPEIFFEDELVCILNMEGRKALTWKYYAKKILYYLRQQKILN					
190	200	210	220	230	240
NLKAFLQQPDDYESYLEGAVYIDQYCNPLSDISLKDIQAQIDSIVELVCKTLRGINSRHP					
250	260	270	280	290	300
SLAFKAGESSMIMEIELQSQVLDAMNYVLYDQLKFKGNRMDYYNALNLYMHQVLIRRTGI					
310	320	330	340	350	360
PISMSLLYLTARQLGVPLEPVNFPSHFLLRWCQGAEGATLDIFDYIYIDAFGKGKQLTV					
370	380	390	400	410	420
KECEYLIGQHVTAALYGVVNVKKVLQRMVGNLLSLGKREGIDQSYQLLRDSL DLYLAMYP					
430	440	450	460	470	480
DQVQLLLLQARLYFHLGIWPEKVL DILQHIQTLDPGQHGA VG YLVQHTLEHIERKKKEEVG					
490	500	510	520	530	540
VEVKLR SDEKHRDVCYSIGLIMKHKRYGYN CVIYGWDPTCMMGHEWIRNMNVHSLPHGHH					
550	560	570	580	590	600
QPFYNVLVEDGSCRYAAQENLEYNVEPQEISHPDVG RYFSEFTGTHYIPNAELEIRYPED					
610	620				
LEFVYETVQNIYSAKKENIDE					

FIG. 12A

[illegible]

FIG. 12B

10 20 30 40 50 60  
RSTGFRRAGEWSR\*XLAASPGXLRRPAXTFVLSNLAEVVERVLTFLPAKALLRVACVR  
70 80 90  
LWRECVRRVLRTHRSVTWISAGLAEAGHLXGH

FIG. 13A

10 20 30 40 50 60  
CCGTAGTACTGGNTTCCGGCGGGCTGGTGAGGAATGGAGCCGGTAGNTGCTTGCGGCGAG  
70 80 90 100 110 120  
TCCCGGGNTCCTCCGTAGACCCGCGGANACCTTCGTGTTGAGTAACCTGGCGGAGGTGGT  
130 140 150 160 170 180  
GGAGCGTGTGCTCACCTTCCTGCCCCGCAAGGCGTTGCTGCGGGTGGCCTGCGTGTGCCG  
190 200 210 220 230 240  
CTTATGGAGGGAGTGTGTGCGCAGAGTATTGCGGACCCATCGGAGCGTAACCTGGATCTC  
250 260 270  
CGCAGGCCTGGCGGAGGCCGCGCCACCTGGNNGGGGCATT

FIG. 13B

10042417.010702



10 20 30 40 50 60  
RPRPVQQQQQPPQQPPPPPPQQQPPQQQPPPPPPQQQQQQQPPPPPPPPPLPQERNVVG  
70 80 90 100 110 120  
ERDDDDVPADMVAEESGPGAQNSPYQLRRKTLLPKRTACPTKNSMEGASTSTTENFGHRAK  
130 140 150 160 170 180  
RARVSGKSQDLSAAPAEQYLQEKL PDEVVLKIFSYLLEQDLCRAACVCKRFSELANDPNL  
190  
WKRLYMEVF EYTRPMMH

FIG. 14A

10042417-010702

10	20	30	40	50	60
GCGGCCGCGCCCGGTGCAGCAACAGCAGCAGCAGCCCCCGCAGCAGCCGCGCCGCGCAGCC					
70	80	90	100	110	120
GCCCCAGCAGCAGCCGCCCCAGCAGCAGCCTCCGCCGCCGCCGCGCAGCAGCAGCAGCAGCA					
130	140	150	160	170	180
GCAGCCTCCGCCGCCGCCACCGCCGCCTCCGCCGCTGCCTCAGGAGCGGAACAACGTCGG					
190	200	210	220	230	240
CGAGCGGGATGATGATGTGCCTGCAGATATGGTTGCAGAAGAATCAGGTCCTGGTGCACA					
250	260	270	280	290	300
AAATAGTCCATACCAACTTCGTAGAAAACTCTTTTGCCGAAAAGAACAGCGTGTCCAC					
310	320	330	340	350	360
AAAGAACAGTATGGAGGGCGCCTCAACTTCAACTACAGAAAACCTTGGTCATCGTGCAAA					
370	380	390	400	410	420
ACGTGCAAGAGTGTCTGGAATAATCACAAGATCTATCAGCAGCACCTGCTGAACAGTATCT					
430	440	450	460	470	480
TCAGGAGAACTGCCAGATGAAGTGGTTCTAAAAATCTTCTTACTTGCTGGAACAGGA					
490	500	510	520	530	540
TCTTTGTAGAGCAGCTTGTGTATGTAAACGCTTCAGTGAACCTTGCTAATGATCCCAATTT					
550	560	570	580	590	
GTGGAAACGATTATATATGGAAGTATTTGAATATACTCGCCCTATGATGCAT					

FIG. 14B

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10 20 30 40 50 60  
RPRPGLRGGRAPCEVTMEAGGLPELWRLMILAYLHLPDLGRCSLVCRAWYELILSLDSTR  
70 80 90 100 110 120  
WRQLCLGCTECRHPNWPNQPDVEPESWREAFKQHYLASKTWTKNALDLESSICFSLFRRR  
130 140 150 160 170  
RERRTLSVGPGREFDSLGSALAMASLYDRIVLFPGVYEEQGEIILKVPVEIVGQKLG

FIG. 15A

10 20 30 40 50 60  
GCGGCCGCGGCCCGGACTCCGCGGTGGGCGAGCGCCCTGTGAGGTGACCATGGAGGCTGG

70 80 90 100 110 120  
TGGCCTCCCTTGGAGCTGTGGCGCATGATCTTAGCCTACTTGACCTTCCCGACCTGGG

130 140 150 160 170 180  
CCGCTGCAGCCTGGTATGCAGGGCCTGGTATGAACTGATCCTCAGTCTCGACAGCACCCG

190 200 210 220 230 240  
CTGGCGGCAGCTGTGTCTGGGTTGCACCGAGTGCCGCCATCCCAATTGGCCCAACCAGCC

250 260 270 280 290 300  
AGATGTGGAGCCTGAGTCTTGGAGAGAAGCCTTCAAGCAGCATTACCTTGCATCCAAGAC

310 320 330 340 350 360  
ATGGACCAAGAATGCCTTGGACTTGGAGTCTTCCATCTGCTTTTCTCTATTCCGCCGGAG

370 380 390 400 410 420  
GAGGGAACGACGTACCCTGAGTGTTGGGCCAGGCCGTGAGTTTGACAGCCTGGGCAGTGC

430 440 450 460 470 480  
CTTGGCCATGGCCAGCCTGTATGACCGAATTGTGCTCTTCCCAGGTGTGTACGAAGAGCA

490 500 510 520 530  
AGGTGAAATCATCTTGAAGGTGCCTGTGGAGATTGTAGGGCAGGGGAAGTTGGGTGA

FIG. 15B

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10 20 30 40 50 60  
ETETAPLTLES LPTDPLLLILSFLDYRDLINCCYVSRRLSQLSSH DPLWRRHCKKYWLIS

70 80 90 100 110 120  
EEEKTQKNQCWKSLFIDTYS DVGRIYIDHYAAIKKASGMISRNIWSPGVLGWVLSLKEGCS

130 140 150 160 170 180  
RGRPRCCGSADWAASFLDDYRCSYRIHNGQKLVGSWGYWEAWHCLITIVLKIC\*TSIQLP

190 200 210 220 230 240  
EIPAETGTEILSPFNFCIHTGLSQYIAVEAAEG\*NKNEVFYQCQTVERVFKYGIKMCS DG

250  
CINGMH\*VFS

FIG. 16A

10 20 30 40 50 60  
GAGACCGAGACGGCGCCGCTGACCCCTAGAGTCGCTGCCCCACCGATCCCCTGCTCCTCATC  
70 80 90 100 110 120  
TTATCCTTTTTGGACTATCGGGATCTAATCAACTGTTGTTATGTCAGTCGAAGATTAAGC  
130 140 150 160 170 180  
CAGCTATCAAGTCATGATCCGCTGTGGAGAAGACATTGCAAAAAATACTGGCTGATATCT  
190 200 210 220 230 240  
GAGGAAGAGAAAACACAGAAGAATCAGTGTTGGAAATCTCTTTCATAGATACTTACTCT  
250 260 270 280 290 300  
GATGTAGGAAGATACATTGACCATTATGCTGCTATTAAAAAGGCCTCGGGAATGATCTCA  
310 320 330 340 350 360  
AGAAATATTTGGAGCCCAGGTGTCCTCGGATGGGTTTTATCTCTGAAAGAGGGGTGCTCG  
370 380 390 400 410 420  
AGAGGAAGACCTCGATGCTGTGGAAGCGCAGATTGGGCTGCAAGTTTCCTGGACGATTAT  
430 440 450 460 470 480  
CGATGTTTCATACCGAATTACCAATGGACAGAAGTTAGTTGGTTCCTGGGGTTATTGGGAA  
490 500 510 520 530 540  
GCATGGCACTGTCTAATCACTATCGTTCTGAAGATTTGTTAGACGTCGATACAGCTGCCG  
550 560 570 580 590 600  
GAGATTCCAGCAGAGACAGGGACTGAAATACTGTCTCCCTTTAACTTTTGCATACATACT  
610 620 630 640 650 660  
GGTTTGAGTCAGTACATAGCAGTGGAAGCTGCAGAGGGTTGAAACAAAAATGAAGTTTTC  
670 680 690 700 710 720  
TACCAATGTCAGACAGTAGAACGTGTGTTTAAATATGGCATTAAAGATGTGTTCTGATGGT  
730 740 750  
TGTATAAATGGCATGCATTAGGTATTTTCAG

FIG. 16B

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10	20	30	40	50	60
GSGFRAGGWPLTMPGKHQHFQEPEVGCCGKYFLFGFNIVFWVLGALFLAIGLWAWGEKGV					
70	80	90	100	110	120
LSNISALTDLGGLDPVWLVCGSWRRHVGAGLCWAAIGALRENTFLLKFFXXFLGLIFFLE					
LA					

FIG. 17A

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10	20	30	40	50	60
GGCTCCGGTTTCCGGGCCGGCGGGTGGCCGCTCACCATGCCC GGNAAGCACCAGCATTTTC					
70	80	90	100	110	120
CAGGAACCTGAGGTCGGCTGCTGCGGGAAATACTTCCTGTTTGGCTTCAACATTGTCTTC					
130	140	150	160	170	180
TGGGTGCTGGGAGCCCTGTTCTGGCTATCGGCCTCTGGGCCTGGGGTGAGAAGGGCGTT					
190	200	210	220	230	240
CTCTCGAACATCTCAGCGCTGACAGATCTGGGAGGCCTTGACCCCGTGTGGCTTGTTTGT					
250	260	270	280	290	300
GGTAGTTGGAGGCGTCATGTTCGGTGCTGGGCTTTGCTGGGCTGCAATTGGGGCCCTCCGG					
310	320	330	340	350	360
GAGAACACCTTCCTGCTCAAGTTTTTCTNCGNGTTCCTCGGTCTCATCTTCTTCCTGGAG					
CTGGCAAC					

FIG. 17B



10 20 30 40 50 60  
AAAAAYLDELPEPLLLRVLAALPAELVQACRLVCLRWKELVDGAPLWLLKCQQEGLVP  
70 80 90 100 110 120  
EGGVEEERDHWQQFYFLSKRRRNLLRNPCGEEDLEGWCDVEHGGDGWRVEELPGDSGVEF  
130 140 150 160 170 180  
THDESVKKYFASSFEWCRKAQVIDLQAEGYWEELDDTTQPAIVVKDWYSGRSDAGCLYEL  
190 200 210 220 230 240  
TVKLLSEHENVLAEFSSGQVAVPQSDGGGWMEISHTFTDYGPGVRFVRFEHGGQGSVYW  
250  
KGWFGARVTNSSVWVEP\*

FIG. 18A

10 20 30 40 50 60  
GCGGCGGCGCGCGCGCTACCTGGACGAGCTGCCCCGAGCCGCTGCTGCTGCGCGTGGTGGCCGCACTG  
70 80 90 100 110 120 130  
CCGCGCGCGGAGCTGGTGCAGGCCTGCCGCGCTGGTGTGCCCTGCGCTGGAAGGAGCTGGTGGACGGCGCC  
140 150 160 170 180 190 200  
CCGCTGTGGCTGCTCAAGTGCCAGCAGGAGGGGCTGGTGGCCGAGGGCGGCGTGGAGGAGGAGCGCGAC  
210 220 230 240 250 260 270  
CACTGGCAGCAGTTCTACTTCTGAGCAAGCGGCGCCGAACCTTCTGCGTAACCCGTGTGGGGAAGAG  
280 290 300 310 320 330 340  
GACTTGGAAGGCTGGTGTGACGTGGAGCATGGTGGGGACGGCTGGAGGGTGGAGGAGCTGCCTGGAGAC  
350 360 370 380 390 400 410  
AGTGGGGTGGAGTTACCCACGATGAGAGCGTCAAGAAGTACTTCGCCTCCTCTTTGAGTGGTGTCCG  
420 430 440 450 460 470 480  
AAAGCACAGGTCATTGACCTGCAGGCTGAGGGCTACTGGGAGGAGCTGCTGGACACGACTCAGCCGGCC  
490 500 510 520 530 540 550  
ATCGTGGTGAAGGACTGGTACTCGGGCCGACGCGAGCTGGTTGCCTCTACGAGCTCACCCTTAAGCTA  
560 570 580 590 600 610 620  
CTGTCCGAGCACGAGAACGTGCTGGCTGAGTTCAGCAGCGGGCAGGTGGCAGTGCCCCAAGACAGTGAC  
630 640 650 660 670 680 690  
GGCGGGGGCTGGATGGAGATCTCCACACCTTCACCGACTACGGGCGGGCGTCCGCTTCGTCCGCTTC  
700 710 720 730 740 750  
GAGCACGGGGGGCAGGGCTCCGTCTACTGGAAGGGCTGGTTCGGGGCCCGGTGACCAACAGCAGCGTG  
760 770  
TGGGTAGAACCCTGA

FIG. 18B

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10	20	30	40	50	60
MGEKAVPLRRRRVKRSCPSCGSELGVEEKRGKGNPISIQLFPPPELVEHIIISFLPVRDLV					
70	80	90	100	110	120
ALGQTCRYFHEVCDGEGVWRRICRRLSPRLQDQDTKGLYFQAFGGRRRCLSKSVAPLLAH					
130	140	150	160	170	180
GYRRFLPTKDHVFILDYVGTLLFFLKNALVSTLGQMOWKRACRYVVLCRGAKDFASDPRCD					
190	200	210	220	230	240
TVYRKLYVLATREPQEVVGTSSRACDCVEVYLQSSGQRVFKMTFHHSMTFKQIVLVGQ					
250	260	270	280	290	300
ETQRALLLLEEGKIYSLVNETQLDQPRSYTVQLALRKVSHYLPHLRVACMTSNQSSTL					
310					
YVTDPILCSWLQPPWPGG					

FIG. 19A

10 20 30 40 50 60  
ATGGGCGAGAAGGCGGTCCCTTTGCTAAGGAGGAGGCGGGTGAAGAGAAGCTGCCCTTCTGTGGCTCG

70 80 90 100 110 120 130  
GAGCTTGGGGTTGAAGAGAAGAGGGGGAAAGGAAATCCGATTTCATCCAGTTGTTCCTCCAGAGCTG

140 150 160 170 180 190 200  
GTGGAGCATATCATCTCATTCCTCCCAGTCAGAGACCTTGTGGCCCTCGGCCAGACCTGCCGCTACTTC

210 220 230 240 250 260 270  
CACGAAGTGTGGGATGGGGAGGCGGTGTGGAGACGCATCTGTGGCAGACTCAGTCCGCGCTCCAAGAT

280 290 300 310 320 330 340  
CAGGACACGAAGGGCCTGTATTTCCAGGCATTGTGGAGGCCGCCGCGATGTCTCAGCAAGAGCGTGGCC

350 360 370 380 390 400 410  
CCCTTGCTAGCCACGGCTACCGCCGCTTCTTGCCCAACCAAGGATCACGTCTTATTCTTGACTACGTG

420 430 440 450 460 470 480  
GGGACCTCTTCTTCTCAAAAATGCCCTGGTCTCCACCTCGGCCAGATGCAGTGGAAGCGGGCTGT

490 500 510 520 530 540 550  
CGCTATGTTGTGTTGTGTCGTGGAGCCAAGGATTTGCCTCGGACCCAAGGTGTGACACAGTTTACCGT

560 570 580 590 600 610 620  
AAATACCTCTACGTCTTGGCCACTCGGGAGCCGAGGAAGTGGTGGGTACCACCAGCAGCCGGGCCTGT

630 640 650 660 670 680 690  
GACTGTGTTGAGGTCTATCTGCAGTCTAGTGGGCAGCGGTCTTCAAGATGACATTCCACCACTCAATG

700 710 720 730 740 750  
ACCTTCAAGCAGATCGTGCTGGTTGGTCAGGAGACCCAGCGGGCTCTACTGCTCCTCACAGAGGAAGGA

760 770 780 790 800 810 820  
AAGATCTACTCTTTGGTAGTGAATGAGACCCAGCTTGACCAGCCACGCTCCTACACGGTTCAGCTGGCC

830 840 850 860 870 880 890  
CTGAGGAAGGTGTCCCACTACCTGCCTCACCTGCGCGTGGCCTGCATGACTTCCAACCAGAGCAGCACC

900 910 920 930 940 950  
CTCTACGTACAGATCCTATTCTGTGCTCTTGGCTACAACCACCTTGGCCTGGTGGATGA

FIG. 19B

10042417-010702

10 20 30 40 50 60  
RGGSEGRGRGREKRARGARRKRKQGGREARAADGEGGSGPGAEGARTRPREEAEGGGSV

70 80 90 100 110 120  
EEGARGIIKGDEGSVGAGKEAQGRKYGKEEWRVRARRREGARPGRVQGGQVWAYIPGT

130 140 150 160 170 180  
GAAMAAAAREEEEEEAARESAACPAAGPALWRLPEVLLLHMCSYLDMRALGRLAQVYRWLW

190 200 210 220 230 240  
HFTNCDLLRRQIAWASLNSGFTRLGTNLMTSVPVKVSQNWIVGCCREGILLKWRCSQMPW

250 260 270 280 290 300  
MQLEDDALYISQANFILAYQFRPDGASLNRQPLGVSAGHDEDVCHFVLATSHIVSAGGDG

310 320 330 340 350 360  
KIGLGKIHSTFAAKYWAHEQEVNVCVDCKGGIISFGSRDRTAKVWPLASGQLGQCLYTIQT

370 380 390 400 410 420  
EDQIWSVAIRPLLSSFVTGTACCGHFSPLKIWDLNSGQLMTHLDRDFPPRAGVLDVIYES

430 440 450 460 470 480  
PFALLSCGYDTYVRYWDCRTSVRKCVMEWEEPHNSTLYCLQTDGNHLLATGSSFYSVURL

490 500 510 520 530  
WDRHQACPHTFPLTSTRLGSPVYCLHLTTKHLAALSYNLHVLDIQNP\*

FIG. 20A

202070" 1742447" 010702

CGAGGGGGAAGCGAAGGAAGGGGAAGAGGAAGGGAAGGAGGAGGGGCAAGGCGGAAGAGGAAGCAGGGCGGAAGGGGAAGCCCGGGCCG  
CAGACGGCGAAGGAGGCAGCGGGGCGGGGGCTGAGGCGGGAGCGAGGACACGCCCAAGAGAGGAAGCAGAGGGAGGCGGAAGCGTGGAGGAAGG  
GGCGAGAGGCATCATCAAAGGAGATGAGGGGAGCGTAGGGGCGGGGAAGAGGACACAAGGAAGAAAGTATGGGAAGGAGGAATGGAGGGTCAGG  
GCTAGGCGGGCGGGAGGGCGCCAGGCCGGGAAGAGTACAAGGACAAGGAGGTGAGGTTTGGGCCTACATCCCGGGGACAGGGGCGGCCATGGCGG  
CGGCAGCCAGGAGGAGGAGGAGGAGGAGGCGGGCTCGGGAGTCAGCCGCTGCCCGGCTCGGGGGCCAGCGCTCTGGCCCTGCCGAAGTGTCTGCT  
GCTGCACATGTGCTCTACTCGACATCGGGGCGCTGGGGCGCTGGCCAGGTGTACCGCTGGCTGTGGCACTTCACCAACTGGGACCTGCTC  
CGGGCGCAGATAGCTGGGCTCGCTCAACTCCGGCTTCACCGGCTCGGCACCAACCTGATGACCAGTGTCCAGTGAAGGTGTCTCAGAACT  
GGATAGTGGGGTGTCTGCCGAGAGGGGATTCTGCTGAAGTGGAGATGCAGTTCAGATGCCCTGGATGCAGCTAGAGGATGATGCTTTGTACATATC  
CCAGGCTAATTTATCTCTGGCCTACCACTTCGGTCCAGATGGTGGCAGCTTGAACCGTCAGCCTCTGGGAGTCTCTGCTGGGCATGATGAGGAC  
GTTTGGCACTTTGTGCTGGCCACCTCGCATATTGTCACTGAGGAGGAGATGGGAAGATTGGCCCTGGTAAGATTACAGCACCTTCGCTGCCA  
AGTACTGGGCTCATGAACAGGAGGTGAAGTGTGTGGATTGCAAGGGGGCATCATATCATTTGGCTCCAGGGACAGGACGGCCAAGGTGTGGCC  
TTTGGCCTCAGGCCAGCTGGGGCAGTGTATATACACCATCCAGACTGAAGACCAATCTGGTCTGTGCTATCAGGCCATTACTCAGCTCTTTT  
GTGACAGGGACGGCTTGTGTGGCACTTCTCACCCCTGAAAATCTGGGACCTCAACAGTGGGCGAGCTGATGACACACTTGGACAGAGACTTTC  
CCCCAAGGGCTGGGGTGTCTGATGTATATATGAGTCCCTTTTGGCACTGCTCTCTGTGGCTATGACACCTATGTTCCGCTACTGGGACTGGCG  
CACCAGTGTCCGGAATGTGTATGAGTGGGAGGAGCCCCACAACAGCACCTCTGACTGCCTGCAGACAGATGGCAACCACTTGCTTGGCCACA  
GGTTCTCTCTTATAGCGTTGTACGGCTGTGGGACCGGCACCAAGGGGCTGCCCGCACACCTTCCCGCTGACGTGACCCGCTCGGCAGCC  
CTGTGTACTGCCTGCATCTCACCACCAAGCATCTCTATGCTGGCTGTCTTACAACCTCCACGTCTGGATATTCAAACCCGTGA

FIG. 20B

10 20 30 40 50 60  
LILTSVLLFQRHGYCTLGEAFNRDLDFSSAIQDIRTFNYVVKLLQLIAKSQTSLSGVAQK  
70 80 90 100 110 120  
NYFNILDKIVQKVLDDHHNPRLIKDLLQDLSSTLCILIRGVGKSVLVGNINIWICRLETI  
130 140 150 160 170 180  
LAWQQQLQDLQMTKQVNNGLTSLDPLHMLNNILYRFSGDWDIITLGQVPTPLYMLSEDR  
190 200 210 220 230 240  
QLWKKLCQYHFAEKQFCRHLILSEKGHIEWKLMYFALQKHYPAGEQYGDTLHFCRHCSIL  
250 260 270  
FWKDSGHPCTAADPDSCFTPVSPQHFDLKF

FIG. 21A

10 20 30 40 50 60  
GCATTGCTATAATTTTACTATACTCTCATCTAAATCTAAATCAGTCTTCAAAATAAAAACAAATTGTC

70 80 90 100 110 120 130  
CTTTGCCAAAAATTTTTTAATCGCACAATTAATTGACATTAAGTCCAATTCTTTTTGGCTAATTGAC

140 150 160 170 180 190 200  
TAATTTTAACTTCTGTGTGCTTTTCCAGAGGCATGGCTATTGCACCTTGGGAGAAGCCTTTAATCGGT

210 220 230 240 250 260 270  
TAGACTTCTCAAGTGAATTCAAGATATCCGAACGTTCAATTATGTGGTCAAACCTGTTGCAGCTAATTG

280 290 300 310 320 330 340  
CAAAATCCCAGTTAACTTCATTGAGTGGCGTGGCACAGAAGAATTACTTCAACATTTTGGATAAAAATCG

350 360 370 380 390 400 410  
TTCAAAGGTTCTTGATGACCACCACAATCCTCGCTTAATCAAAGATCTTCTGCAAGACCTAAGCTCTA

420 430 440 450 460 470 480  
CCCTCTGCATTCTTATTAGAGGAGTAGGGAAGTCTGTATTAGTGGGAACATCAATATTTGGATTGCGC

490 500 510 520 530 540 550  
GATTAGAACTATTCTCGCCTGGCAACAACAGCTACAGGATCTTCAGATGACTAAGCAAGTGAACAATG

560 570 580 590 600 610 620  
GCCTCACCTCAGTGACCTTCCTCTGCACATGCTGAACAACATCCTATACCGGTTCTCAGACGGATGGG

630 640 650 660 670 680 690  
ACATCATCACCTTAGGCCAGGTGACCCCCACGTTGTATATGCTTAGTGAAGACAGACAGCTGTGGAAGA

700 710 720 730 740 750  
AGCTTTGTGCTAGTACCATTTTGTGTAAGAGCAGTTTGTAGACATTTGATCCTTTTCAGAAAAAGGTCATA

760 770 780 790 800 810 820  
TTGAATGGAAGTTGATGTACTTTGCACCTTCAGAAACATTACCCAGCGAAGGAGCAGTACGGAGACACAC

830 840 850 860 870 880 890  
TGCATTTCTGTGCGCACTGCAGCATTCTCTTTTGAAGGACTCAGGACAQCCCTGCACGGCGGCCGACC

900 910 920 930 940 950 960  
CTGACAGCTGCTTCACGCCTGTGTCTCCGCAGCACTTCATCGACCTCTTCAAGTTTTAAGGGCTGCCCC

970 980 990 1000 1010 1020 1030  
TGCCATCCCTATTGGAGATTGTGAATCCTGCTGTCTGTGTCAGGGCTCATAGTGAGTGTCTGTGAGGTG

1040 1050 1060 1070 1080 1090 1100  
GGTGGAGACTCCTCGGAAGCCCCTGCTTCCAGAAAGCCTGGGAAGAACTGCCCTTCTGCAAAGGGGGGA

1110 1120 1130 1140 1150 1160 1170  
CTGCATGGTTGCATTTTCATCACTGAAAGTCAGAGGCCAAGGAATCATTCTACTTCTTTAAAAACTC

1180 1190 1200 1210  
CTTCTAAGCATATTAAATGTGAAATTTTGGCTACTCTCTC

FIG. 21B



10 20 30 40 50 60  
YGSEKGSSSISSDVSSSTDHTPTKAQKNVATSESDLSMRTLSTPSPALICPPNLPGFQ

70 80 90 100 110 120  
NGRGSSTSSSSITGETVAMVHSPPPTRLTHPLIRLASRPQKEQASIDRLPDHSMVQIFSF

130 140 150 160 170 180  
LPTNQLCRCARVCRRWYNLAWDPRLWRTIRLTGETINVDRALKVLTRRLCQDTPNVCLML

190 200 210 220 230 240  
ETVTVSGCRRLTDRGLYTIAQCCPELRRLEVSGCYNISNEAVFDVVS LCPNLEHLDVSGC

250 260 270 280 290 300  
SKVTCISLTREASIKLSPLHGKQISIRYLDMTDCFVLEDEGLHTIAAHCTQLTHLYLRRC

310 320 330 340 350 360  
VRLTDEGLRYLVIYCASI KELS VSDCRFVSDFGLREIAKLESRLRYLSIAHCGRVTDVGI

370 380 390 400 410 420  
RYVAKYCSKLRYNARGCEGITDHGVEYLAKNCTKLKSLDIGKCPLVSDTGLECLALNCF

430 440 450 460 470 480  
NLKRLSLKSCESITGQGLQIVAANCFDLQTLNVQDCEVSVEALRFVKRHCKRCVIEHTNP

AFF

FIG. 22A

[illegible]

**FIG. 22B**

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10	20	30	40	50	60
AAAPAPAPAPTPTPEEGPDAGWGDRIPLEILVQIFGLLVAADGMPFLGRAARVCRRWQE					
70	80	90	100	110	120
AASQPALWHTVTLSSPLVGRPAKGGVKAEEKLLASLEWLMPNRFSQLQRLTLIHWKSQVH					
130	140	150	160	170	180
PVLKLVGECCPRLTFLKLSGCHGVTADALVMLAKACCQLHSLDLQHSMVESTAVVSFLEE					
190	200	210	220	230	240
AGSRMRKLWLTYSSQTTAILGALLGCCPQLQVLEVSTGINRNSIPLQLPVEALQKGCPO					
250	260	270	280		
LQVLRLNLNLMWLPKPPGRGVAPGPGFPSLEELCLASSTCNFVS					

FIG. 23A

10 20 30 40 50 60  
TGCGGCCGCGCCCGCACCCGCACCGGCACCCACGCCCACGCCCAGGAAGGGCCCGACGCGGGCTGGGG

70 80 90 100 110 120 130  
AGACCGCATTCCCTTGGAATCCTGGTGACAGATTTTCGGGTGTTGGTGGCGGCGGACGGCCCCATGCC

140 150 160 170 180 190 200  
CTTCCTGGGCAGGGCTGCGCGCGTGTGCCGCCGCTGGCAGGAGGCGCTTCCCAACCCGCGCTCTGGCA

210 220 230 240 250 260 270  
CACCGTGACCGTGTCGTCGCCCGCTGGTCGGCCGGCCTGCCAAGGGCGGGGTCAAGGCGGAGAAGAAGCT

280 290 300 310 320 330 340  
CCTTGCTTCCCTGGAGTGGCTTATGCCCAATCGGTTTTTCACAGCTCCAGAGGCTGACCCCTCATCCACTG

350 360 370 380 390 400 410  
GAAGTCTCAGGTACACCCCGTGTGAAGCTGGTAGGTGAGTGCTGTCTCTCGGCTCACTTTCTCTCAAGCT

420 430 440 450 460 470 480  
CTCCGGCTGCCACGGTGTGACTGCTGACGCTCTGGTCATGCTAGCCAAAGCCTGCTGCCAGCTCCATAG

490 500 510 520 530 540 550  
CCTGGACCTACAGCACTCCATGGTGGAGTCCACAGCTGTGGTGAGCTTCTTGAGGAGGCAGGGTCCCG

560 570 580 590 600 610 620  
AATGCGCAAGTTGTGGCTGACCTACAGCTCCCAGACGACAGCCATCCTGGGCGCATTGCTGGGCAGCTG

630 640 650 660 670 680 690  
CTGCCCCCAGCTCCAGGTCTTGAGGTGAGCACCGGCATCAACCGTAATAGCATTCCCCTTCAGCTGCC

700 710 720 730 740 750  
TGTCGAGGCTCTGCAGAAAGGCTGCCCTCAGCTCCAGGTGCTGCGGCTGTTGAACCTGATGTGGCTGCC

760 770 780 790 800 810 820  
CAAGCCTCCGGGACGAGGGGTGGCTCCCGGACCAGGCTTCCCTAGCCTAGAGGAGCTCTGCCTGGCGAG

830 840 850  
CTCAACCTGCAACTTTGTGAGC

FIG. 23B

10 20 30 40 50 60  
 QHCSQKDTAELLRGLSLWNHAEERQKFFKYSVDEKSDKEAEVSEHSTGITHLPPEVMSI  
 70 80 90 100 110 120  
 FSYLNPQELCRCSQVSMKWSQLTKTGLWKHLYPVHWARGDWYSGPATELDTEPDDEWVK  
 130 140 150 160 170 180  
 NRKDESRAFHEWDEDADIDEESESAEESIAISIAQMEKRLHGLIHNVLPHYVGTSVKTLV  
 190 200 210 220 230 240  
 LAYSSAVSSKMVRQILELCPNLEHLDLTQTDISDSAFDSWSWLGCCQSLRHLDLSGCEKI  
 250 260 270 280 290 300  
 TDVALEKISRALGILTSHQSGFLKTSTSKITSTAWKNKDITMQSTKQYACLHDLTNKGIG  
 310 320 330 340 350 360  
 EEIDNEHPWTKPVSSNFSTSPYVWMLDAEDLADIEDTVWRHRNVEVSLCVMETASNFSCS  
 370 380 390 400 410 420  
 TSGCFSKDIVGLRTSVCWQQHCASPAFAYCGHSFCCTGTALRTMSSLPESSAMCRKAART  
 430 440 450 460 470 480  
 RLPRGKDLIYFGSEKSDQETGRVLLFSLSGCYQITDHGLRVLTGGLPYLEHLNLSGC  
 490 500 510 520 530 540  
 LTITGAGLQDLVSACPSLNDEYFYCDNINGPHADTASGCQNLQCGFRACCRSGE\*PLTS  
 550 560 570 580 590  
 DLCLLHLAEQAFFHALYS\*HISCVNHPFLSVTCFGPIXYNFRNLNYQXIVML

FIG. 24A

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10 20 30 40 50 60 70 80 90  
ACAACACTGCTCTCAGAAGGATACTGCAGAAGCTCCTTAGAGGTCTTAGCCTATGGAATCATGCTGAAGAGCGACAGAARTTTTTTAAATATTC

100 110 120 130 140 150 160 170 180  
GTGGATGAAAAGTCAGATAAAGAAGCAGAAGTGTGAGAACACTCCACAGGTATAACCCATCTTCTCCTGAGGTAACTGCTGCAATTTTCAGCT

190 200 210 220 230 240 250 260 270 280  
ATCTTAATCCTCAAGAGTTATGTCGATGCAGTCAAGTAAGCATGAAATGGTCTCAGCTGACAAAACGGGATCGCTTTGGAAACATCTTTACCC

290 300 310 320 330 340 350 360 370  
TGTTTCATTGGGCCAGAGGTGACTGGTATAGTGGTCCCGCAACTGAACTTGATACTGAACCTGATGATGAATGGGTGAAAAATAGGAAAGATGAA

380 390 400 410 420 430 440 450 460 470  
AGTCGTGCTTTTCATGAGTGGGATGAAGATGCTGACATTGATGAATCTGAAGAGTCTGCGGAGGAATCAATTGCTATCAGCATTGCACAAATGG

480 490 500 510 520 530 540 550 560  
AAAAACGTTTACTCCATGGCTTAATTCATAACGTTCTACCATATGTTGGTACTTCTGTAAAAACCTTAGTATTAGCATACAGCTCTGCAGTTTC

570 580 590 600 610 620 630 640 650  
CAGCAAAATGGTTAGGCAGATTTTAGAGCTTTGTCTTAACCTGGAGCATCTGGATCTTACCCAGACTGACATTTTCAGATTCTGCATTTGACAGT

660 670 680 690 700 710 720 730 740 750  
TGGTCTTGGCTTGGTTGCTGCCAGAGTCTTCGGCATCTTGATCTGTCTGGTTGTGAGAAAATCAGAGATGTGGCCCTAGAGAAGATTTCCAGAG

760 770 780 790 800 810 820 830 840  
CTCTTGGAATTCTGACATCTCATCAAAGTGCTTTTTTGAACAATCTACAAGCAAAATTAAGTCAACTCGCTGGAATAAAGACATTACCATT

850 860 870 880 890 900 910 920 930 940  
GCAGTCCACCAAGCAGTATGCTGTTTGCACGATTTAACCAAGGGCATTGGAGAAGAAATAGATAATGAACACCCCTGGACTAAGCCTGTT

950 960 970 980 990 1000 1010 1020 1030  
TCTTCTGAGAATTTCACTTCTCCTTATGTGTGGATGTTAGATGCTGAAGATTGGCTGATATTGAAGATACTGTGGAATGGAGACATAGAAAATG

1040 1050 1060 1070 1080 1090 1100 1110 1120  
TTGAAAGTCTTTGTGTAATGGAAACAGCATCCAACCTTGTGTTCCACCTCTGGTTGTTTGTAGTAAGGACATTGTTGGACTAAGGACTAGTGT

1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
CTGTTGGCAGCAGCATTGTGCTTCTCCAGCCTTTGCGTATTGTGGTCACTCATTTTGTGTACAGGAACAGCTTTAAGAACTATGTCATCACTC

1230 1240 1250 1260 1270 1280 1290 1300 1310  
CCAGAATCTTCTGCAATGTGTAGAAAAGCAGCAAGGACTAGATTGCCTAGGGGAAAAGACTTAATTTACTTTGGGAGTGAAAAATCTGATCAAG

1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
AGACTGGACGTGTACTTCTGTTCTCAGTTTATCTGGATGTTATCAGATCACAGACCATGGTCTCAGGGTTTTGACTCTGGGAGGAGGGCTGCC

1420 1430 1440 1450 1460 1470 1480 1490 1500  
TTATTTGGAGCACCTTAATCTCTCTGGTTGTCTTACTATAACTGGTGCAGGCCCTGCAGGATTTGGTTTCAGCATGCTCTCTCTGAATGATGAA

1510 1520 1530 1540 1550 1560 1570 1580 1590  
TACTTTTACTACTGTGACAACATTAAACGGTCTCATGCTGATACCGCCAGTGGATGCCAGAATTGCACTGTGGTTTTTCGAGCCTGCTGCCGCT

1600 1610 1620 1630 1640 1650 1660 1670 1680 1690  
CTGGCGAATGACCCCTTGACTTCTGATCTTTGTCTACTTCATTAGCTGAGCAGGCTTTCTTTCATGCACTTTACTCATAGCACATTTCTGTGT

1700 1710 1720 1730 1740 1750 1760 1770  
TAACCATCCTTTTTGAGCGTGACTTGTTTTGGGCCCATTTTACAACTCAGAAAATCTTAATTACCAGTGRATTGTAATGTTG

FIG. 24B

10 20 30 40 50 60  
 RVTSGCGLARGSSAMVFSNNDEGLINKKLPKELLRIFSFLDIVTLCRCAQISKAWNILA  
 70 80 90 100 110 120  
 LDGSNWQRIDLFNFQIDVEGRVVENISKRCVGFLRKLSLRGCIGVGDSSLKTFAQNCRNI  
 130 140 150 160 170 180  
 EHLNLNGCTKITDSTCYSLSRFCSKLKHLXLTSCVSITNSSLKGISEGCRNLEYLNLWC  
 190 200 210 220 230 240  
 DQITKDGIEALVRGCRGLKALLRGCTQLEDEALKHIQNYCHELVSLNLQSCSRITDEGV  
 250 260 270 280 290 300  
 VQICRGCHRLQALCLSGCSNLTDAISLTALGLNCPRLQILEAARCSHLTDAGFTLLARNCH  
 310 320 330 340 350 360  
 ELEKMDLEXCILITDSTLIQLSIHCPKLQALSLSHCELI XDDGILHLSNSTCGHERLRVL  
 370 380 390 400 410 420  
 ELDNCLLITDVALXHLENCRGLERLELYDCQQVTRAGIKRMRAQLPHVKVHAYFAPVTPP  
 430 440 450 460 470 480  
 TAVAGSQRLCRCCVIL\*QQLPGPKG\*\*GILSSRRPESS\*PTPPSPNLLILHWERHLQFP  
 490 500 510 520 530 540  
 NRHLSRFKNGEDKKGFI SNI\*HHIVT\*NMALT\*LVLLLPSSLMSSLTSTHLLL\*YL\*RLI  
 550  
 ILKTDQGTGPASKYINCVQ\*

FIG. 25A

10 20 30 40 50 60 70 80 90  
TTTTACTGTACACAGTTGATGTATTTTGATGCTGGGCTGTCTGGTCTGCTTGAGGATTATTAACCTTTAGAGGTATCAGAGAAGCAAATGGG  
100 110 120 130 140 150 160 170 180  
TACTGGTGAGGCTGCTCATTAGGGAAGAGGGCAAAGGAGCACTAGCTAGGTGACAGGCCATGTTTCAGGTCAACAATGTGATGTCAGATGTTGCT  
190 200 210 220 230 240 250 260 270 280  
TATAAATCCTTTCTTGCTTCGCCATTCTTAAATCTTGATAGGTGCTGTGGGAAACTGTAAATGCCTTTCCCAATGGAGAATCAACAGATTG  
290 300 310 320 330 340 350 360 370  
GGTGATGGTGGAGTCGGTCAGGAAGACTCAGGTCTTCTAGAGGAAAGGATGCTCATCACCCCTTNGGCCAGGCAGCTGCTGTCAGAGAATGA  
380 390 400 410 420 430 440 450 460 470  
CACAGCACCTGCACAGTCGCTGTCCACTTCTGCCACTGCTGTCGGTGGGGTGACGGGAGCAAAGTAGGCGTGCACCTTTGATGAGGGAGCTG  
480 490 500 510 520 530 540 550 560  
AGCCCCGATCCGCTTGATGCTGCACGGTAACTGCTGGCAGTCGTACAGCTCGAGGGCGCTCCAGGCCCTCGGCAGTTCTCTAGGTGTGCCAGG  
570 580 590 600 610 620 630 640 650  
GCCACATCAGTGATGAGGAGGCAGTTGTCCAACCTCAGTACCCGACGCTCTCATGGCCACAGGTAAGTGTGCTCAGGTGCAGGATCCCATCAT  
660 670 680 690 700 710 720 730 740 750  
CTGKGATGAGTTACAGTGGGACAGGCTCAGGGCTTGCAGTTTAGGACAGTGAATGGAGAGCTGGATGAGTGTGCTGTGCGTTATCAGGATGCA  
760 770 780 790 800 810 820 830 840  
WTCTTCAAGATCCATCTTCTCCAATTCGTGGCAATTCGAGCTAAAAGTGTAAAACCTGCGTCAGTCAAATGGGAGCATCGGGCAGCCTCCAAA  
850 860 870 880 890 900 910 920 930 940  
ATTTCAGTCGCGGACAGTTCAAACCCAGGGCTGTAAAGAGAGGCATCTGTGAGGTTGCTGCAACCCGAAAGGCAGAGAGCCTGTAGCCGGTGAC  
950 960 970 980 990 1000 1010 1020 1030  
AGCCCCCTGCATATCTGCACCACACCTTCATCCGTGATACGTGAGCAGGACTGCAAGTTGAGGCTCACAAGCTCATGGCAGTAATTCTGAATGTG  
1040 1050 1060 1070 1080 1090 1100 1110 1120  
TTTCAGAGCTTCATCTTCTAACTGTGTGCAGCCCTCAGGAGCAGGGCTTTCAGGCCCTCGACAACCTCGCACCAAGTGCCTCGATGCCATCCTTC  
1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
GTGATCTGATCACACCAAGAGAGGTTTCAGGTACTCCAGGTTTCGGCAGCCCTCACTGATCCCTTCAAGGAGCTGTTTGTAAATAGACACACAGG  
1230 1240 1250 1260 1270 1280 1290 1300 1310  
AGGTCAAGWCCAGATGTTTCAGCTTGGAAACAGAACTCTGCTAAGGCTATAACACGTGCTGTGTCAGTGATTTTGTGTCATCCATTGAGGTTCAAATG  
1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
TTCAATGTTTCGGCAGTTCTGTGCAAAAGGCTTCAAGGAGGAATCCCCAACCAATGCAGCCTCGCAAGCTGAGCTTCTCAGGAATCCAACG  
1420 1430 1440 1450 1460 1470 1480 1490 1500  
CATCGCTTCGAGATATTTCCACCACTCGACCCCTACATCTATTGAAAGTTAAAAAGATCTATTCTTTGCCAGTTGCTTCCATCCAGGGCTA  
1510 1520 1530 1540 1550 1560 1570 1580 1590  
AGATGTTCCAAGCCTTGGAAATCTGTGCACATCGGCACAAAGTTACTATATCCAAGAAGGAAAATATTCTTAACAGAAGTTCTTTGGGTAACCTT  
1600 1610 1620 1630 1640 1650 1660 1670 1680  
TTTGTTAATAAGCCCTTCATCATTTGTTGAGAAAACCATGGCCGAAGAGCCGCGAGCGGCCACAGCCCGAAGTCAACGGC

FIG. 25B



10 20 30 40 50 60  
 MSPVFPMLTVLTMFYIICLRRRARTATRGEMMNTHRAIESNSQTSPLNAEVVQYAKEVVD  
 70 80 90 100 110 120  
 FSSHYGSENSMSYTMWNLAGVPNVFPSSGDFQTAVFRTYGTWWDQCPSASLPFKRTPPN  
 130 140 150 160 170 180  
 FQSQDYVELTFEQQVYPTAVHVLETYHBPAGVIRILACSANPYSPNPPAEVRWEJLWSER  
 190 200 210 220 230 240  
 TKVNASQARQFKPCIKQINFPTNLIRLEVNSSLLEYYTELDAVVLHGVDKPKVLSLKTSL  
 250 260 270 280 290 300  
 IDMNIEDDAYAEKDGCGMDSLNNKFSSAVLGEGPNNGYFDKLPYELIQLILNHLTLPLD  
 310 320 330 340 350 360  
 CRLAQTKLLSQHCCDPLQYIHLNLQPYWAKLDDTSLEFLQSRCTLVQWLNL SWTGNRGF  
 370 380 390 400 410 420  
 ISVAGFSRFLKVCSELVRLELSCSHFLNETCLEVISEMCPNLQALNLSSCDKLPPQAFN  
 430 440 450 460 470 480  
 HIAKLC SLKRLVLYRTKVEQTALLSILNFCSELQHL SLGSCVMIEDYDV IASMI GAKCKK  
 490 500 510 520 530 540  
 LRTL DLWRCKNITENGIAELASGCPLLEELDLGW CPTLQSSTGCFTRLAHQLPNLQKLFL  
 550 560 570 580 590 600  
 TANRSVCDTDIDELACNCTRLQQLDILGTRMVSPASLRKLL ESCKDLSLLDV SFCSQIDN  
 610 620  
 RAVLELNASFPKVFIKKSFTQ

FIG. 26A

10 20 30 40 50 60 70 80 90  
ATGTCACCGGTCTTTCCCATGTTAAACAGTTCTGACCATGTTTTATTATATATGCCTTCGGCGCCGAGCCAGGACAGCTACAAGAGGAGAAATGA  
100 110 120 130 140 150 160 170 180  
TGAACACCCATAGAGCTATAGAATCAAACAGCCAGACTTCCCTCTCAATGCAGAGGTAGTCCAGTATGCCAAGAAGTAGTGGATTTCAGTTCT  
190 200 210 220 230 240 250 260 270 280  
CCATTATGGAAGTGAGAATAGTATGTCTTACTATGTGGAATTGGCTGGTGTACCAAAATGTATCCCAAGTTCTGGTGAAGTTTACTCAGACA  
290 300 310 320 330 340 350 360 370  
GCTGTGTTTCGAACCTTATGGGACATGGTGGGATCAGTGTCTAGTGTCTTCCCTTGCCATTCAAGAGGACGCCACCTAATTTTCAGAGCCAGGACT  
380 390 400 410 420 430 440 450 460 470  
ATGTGGAACCTTACTTTTGAACAACAGGTGTATCCTACAGCTGTACATGTTCTAGAAACCTATCATCCCGGAGCAGTTCATTAGAATTCTCGCTTG  
480 490 500 510 520 530 540 550 560  
TTCTGCAAAATCCTTATTTCCCAAAATCCACAGCTGAAGTAAGATGGAGATTCTTTGGTCAGAGAGACCTACGAAGGTGAATGCTTCCCAAGCT  
570 580 590 600 610 620 630 640 650  
CGCCAGTTTAAACCTTGTATTAAGCAGATAAAATTTCCCCACAAATCTTATACGACTGGAAGTAATAGTTCTTCTTCTGGAATATTACACTGAAT  
660 670 680 690 700 710 720 730 740 750  
TAGATGCAGTTGTGCTACATGGTGTGAAGGACAAGCCAGTGTCTTCTCTCAAGACTTCACCTTATGTACATGAATGATATAGAAGATGATGCCTA  
760 770 780 790 800 810 820 830 840  
TGCAGAAAAGGATGGTTGTGGAATGGACAGTCTTAAACAAAAGTTTAGCAGTGTCTCTCGGGGAAGGGCCAAATATGGGTATTTTGATAAA  
850 860 870 880 890 900 910 920 930 940  
CTACCTTATGAGCTTATTACAGCTGATTCTGAATCATCTTACACTACCAGACCTGTGTAGATTAGCACAGACTTGCAAACTACTGAGCCAGCATT  
950 960 970 980 990 1000 1010 1020 1030  
GCTGTGATCCTCTGCAATACATCCACCTCAATCTGCAACCATACTGGGCAAACTAGATGACACTTCTCTGGAATTTCTACAGTCTCGCTGCAC  
1040 1050 1060 1070 1080 1090 1100 1110 1120  
TCTTGTCCAGTGGCTTAATTTATCTTGGACTGGCAATAGAGGCTTCATCTCTGTGTCAGGATTTAGCAGGTTTCTGAAGTTTGTGGATCCGAA  
1130 1140 1150 1160 1170 1180 1190 1200 1210 1220  
TTAGTACGCCCTTGAATTGTCTTGCAGCCACTTTCTTAATGAACTTGCTTAGAAGTTATTCTGAGATGTGTCCAAATCTACAGGCCTTAAATC  
1230 1240 1250 1260 1270 1280 1290 1300 1310  
TCTCCTCTGTGATAAGCTACCACCTCAAGCTTTCAACCACATTGCAAGTTATGCAGCCTTAAACGACTTGTCTCTATCGAACAAAAGTAGA  
1320 1330 1340 1350 1360 1370 1380 1390 1400 1410  
GCAAAACAGCACTGCTCAGCATTGGAACCTCTGTTTCAGAGCTTCAGCACCTCAGTTTAGGCAGTTGTGTCATGATTGAAGACTATGATGTGATA  
1420 1430 1440 1450 1460 1470 1480 1490 1500  
GCTAGCATGATAGGAGCCAAAGTGTAAAAAACTCCGGACCCTGGATCTGTGGAGATGTAAGAATATTACTGAGAATGGAATAGCAGAAGCTGGCTT  
1510 1520 1530 1540 1550 1560 1570 1580 1590  
CTGGGTGTCCACTACTGGAGGAGCTTGACCTTGGCTGGTGCCCAACTCTGCAGAGCAGCACCGGTGCTTACCAGACTGGCACACAGCTCCC  
1600 1610 1620 1630 1640 1650 1660 1670 1680 1690  
AAACTTGCAAAAATCTTTCTTACAGCTAATAGATCTGTGTGACACAGACATTGATGAATTGGCATGTAATTGTACCAGGTTACAGCAGCTG  
1700 1710 1720 1730 1740 1750 1760 1770 1780  
GACATATTAGGAACAAGAAATGGTAAGTCCGGCATCCTTAAGAAAATCCTGGAATCTTGTAAAGATCTTTCTTACTTGTGTCTCTCTGTT  
1790 1800 1810 1820 1830 1840 1850 1860  
CCAGATTGATAACAGAGCTGTGCTAGAACTGAATGCAAGCTTTCCAAAAGTGTTCATAAAAAAGAGCTTTACTCAGTGA

FIG. 26B

10042417-010702

10	20	30	40	50	60
MQLVPDIEFKITYTRSPDGDGVGNSYIEDNDDDSKMADLLSYFQQQLTFQESVLKLCQPE					
70	80	90	100	110	120
LESSQIHISVLPMEVLMIYIFRWVSSDLDLRSLEQLSLVCRGFYICARDPEIWRLACKV					
130	140	150	160	170	180
WGRSCIKLVPYTSWREMFLERPRVRFDGVYISKTTYIRQGEQSLDGFYRAWHQVEYYRYI					
190	200	210	220	230	240
RFFPDGHVMMLTTPEEPQSIVPRLRTRNTRTDAILLGHYRLSQDTDNQTKVFAVITKKKE					
250	260	270	280	290	300
EKPLDYKYRYFRRVPVQEQSFHVGLQLCSSGHQRFNKLIWIHHSCHITYKSTGETAVS					
310	320				
AFEIDKMYTPLFFARVRSYTAFSERPL					

FIG. 27A

10 20 30 40 50 60  
ATGCAACTTGTACCTGATATAGAGTTCAAGATTACTTATACCCGGTCTCCAGATGGTGTATGGCGTTGGA  
70 80 90 100 110 120 130  
AACAGCTACATTGAAGATAATGATGATGACAGCAAAATGGCAGATCTCTTGTCTACTTCCAGCAGCAA  
140 150 160 170 180 190 200  
CTCACATTTTCAGGAGTCTGTGCTTAAACTGTGTCAGCCTGAGCTTGAGAGCAGTCAGATTACATATCA  
210 220 230 240 250 260 270  
GTGCTGCCAATGGAGGTCCTGATGTACATCTCCGATGGGTGGTGTCTAGTGACTTGGACCTCAGATCA  
280 290 300 310 320 330 340  
TTGGAGCAGTTGTCTGCTGGTGTGCAGAGGATCTACATCTGTGCCAGAGACCCTGAAATATGGCGTCTG  
350 360 370 380 390 400 410  
GCCTGCTTGAAAGTTTGGGGCAGAAGCTGTATTAAACTTGTTCCTGACACGTCCTGGAGAGAGATGTTT  
420 430 440 450 460 470 480  
TTAGAACGGCCTCGTGTTCGGTTTGATGGCGTGTATATCAGTAAAACCACATATATTCGTCAAGGGGAA  
490 500 510 520 530 540 550  
CAGTCTCTTGATGGTTTCTATAGAGCCTGGCACCAAGTGAATATTACAGGTACATAAGATTCTTTCTT  
560 570 580 590 600 610 620  
GATGGCCATGTGATGATGTTGACAACCCCTGAAGAGCCTCAGTCCATTGTTCCACGTTTAAGAACTAGG  
630 640 650 660 670 680 690  
AATACCAGGACTGATGCAATTCTACTGGGTCACTATCGCTTGTCAACAAGACACAGACAATCAGACCAA  
700 710 720 730 740 750  
GTATTTGCTGTAATAACTAAGAAAAAGAAGAAAAACCACTTGACTATAAATACAGATATTTTCGTCTGT  
760 770 780 790 800 810 820  
GTCCCTGTACAAGAAGCAGATCAGAGTTTTTCATGTGGGGCTACAGCTATGTTCCAGTGGTCACCAGAGG  
830 840 850 860 870 880 890  
TTCAACAACTCATCTGGATACATCATTCTTGTACATTACTTACAAATCAACTGGTGAGACTGCAGTC  
900 910 920 930 940 950 960  
AGTGCTTTTGAGATTGACAAGATGTACACCCCTTGTCTTCGCCAGAGTAAGGAGCTACACAGCTTTC  
970 980  
TCAGAAAGGCCTCTGTAG

FIG. 27B

10042417 010702 202070 274200T

10	20	30	40	50	60
AALDPDLENDDFFVRKTGAFHANPYVLRAFEDFRKFSEQDDSVERRDIILQCREGELVLPD					
70	80	90	100	110	120
LEKDDMIVRRIPAQKKEVPLSGAPDRYHPVPFPEPWTLPPFIQAKFLCVLERTCPSKEKS					
130	140	150	160	170	180
NSCRILVPSYRQKKDDMLTRKIQSWKLGTTVPPIISFTPGPCSEADLKRWEAIREASRLRH					
190	200	210	220	230	240
KKRLMVERLFQKIYGENGSKMSDVSAEDVQNLRLRYEEMQKIKSQLKEQDQKWQDDLA					
250					
KWKDRRKSYSIDLQK					

FIG. 28A

10 20 30 40 50 60  
GCAGCCCTGGATCCTGACTTAGAGAATGATGATTCTTTGTCAGAAAAGACTGGGGCTTTCCATGCAAAT  
70 80 90 100 110 120 130  
CCATATGTTCTCCGAGCTTTTGAAGACTTTAGAAAGTTCTCTGAGCAAGATGATTCTGTAGAGCGAGAT  
140 150 160 170 180 190 200  
ATAATTTTACAGTGTAGAGAAGGTGAACTTGTAAGTTCCGGATTGGAAGAAAGATGATATGATTGTTTCGC  
210 220 230 240 250 260 270  
CGAATCCCAGCACAGAAGAAAGAAGTGCCGCTGTCTGGGGCCCCAGATAGATACCAACCCAGTCCCTTTT  
280 290 300 310 320 330 340  
CCCGAACCCTGGACTCTTCCCTCCAGAAATTCAAGCAAAATTTCTCTGTGTACTTGAAAAGGACATGCCCA  
350 360 370 380 390 400 410  
TCCAAAGAAAAAGTAATAGCTGTAGAATATTAGTTCCTTCATATCGGCAGAAGAAAGATGACATGCTG  
420 430 440 450 460 470 480  
ACACGTAAGATTCACTCCTGGAACTGGGAATACCGTGCCTCCCATCAGTTTACNCCTGGCCCCCTGC  
490 500 510 520 530 540 550  
AGTGAGGCTGACTTGAAGAGATGGGAGGCCATCCGGGAGGCCAGCAGACTCAGGCACAAGAAAAGGCTG  
560 570 580 590 600 610 620  
ATGGTGGAGAGACTCTTTCAAAGATTTATGGTGAGAATGGGAGTAAGTCCATGAGTGATGTCAGCGCA  
630 640 650 660 670 680 690  
GAAGATGTTCAAAGCTTGCCTCAGCTGCGTTACGAGGAGATGCAGAAAATAAAATCACAATTAAAAGAA  
700 710 720 730 740 750  
CAAGATCAGAAATGGCAGGATGACCTTGCAAATGGAAAGATCGTCGAAAAAGTTACACTTCAGATCTG  
760  
CAGAAG

FIG. 28B

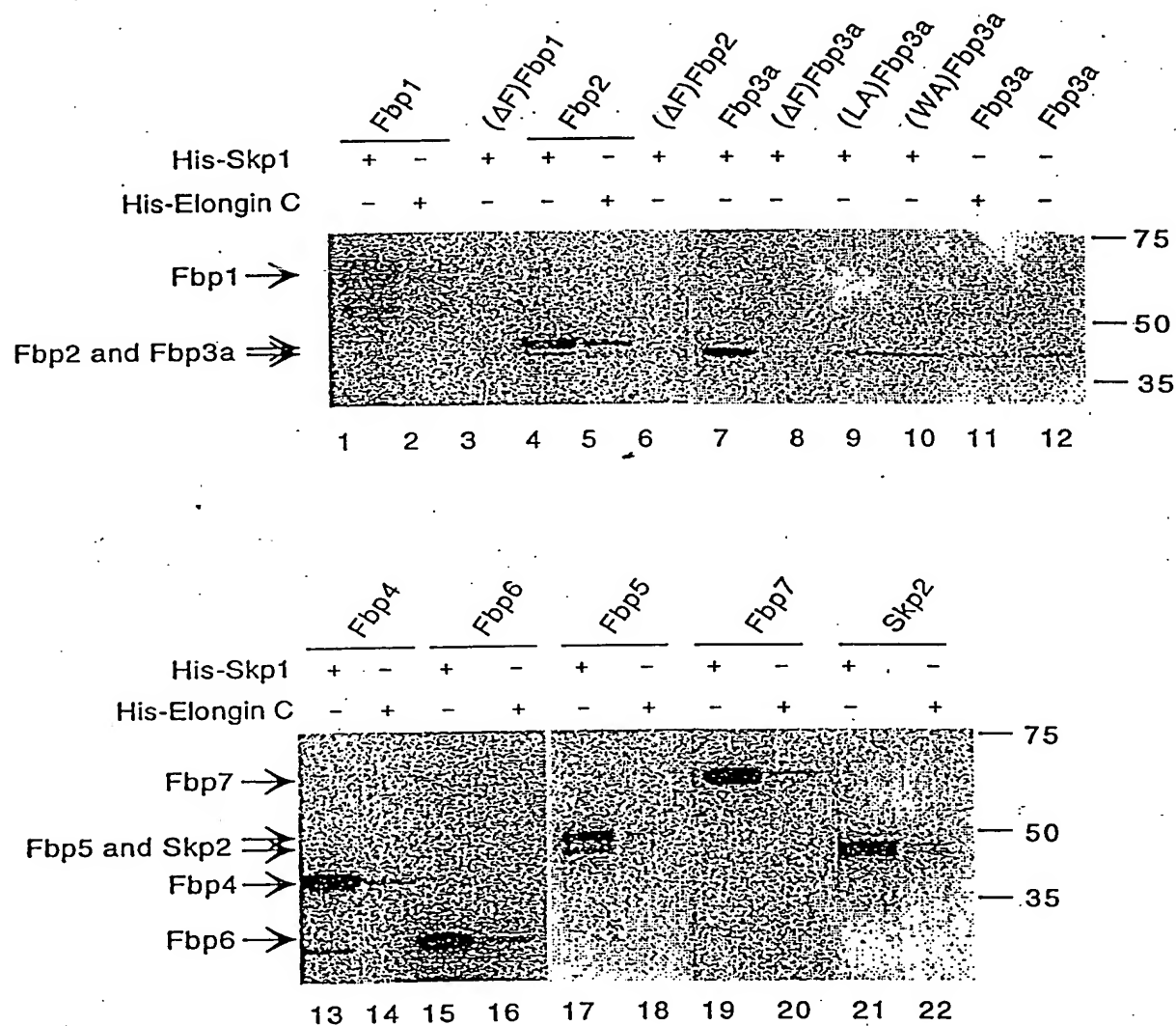


FIG. 29

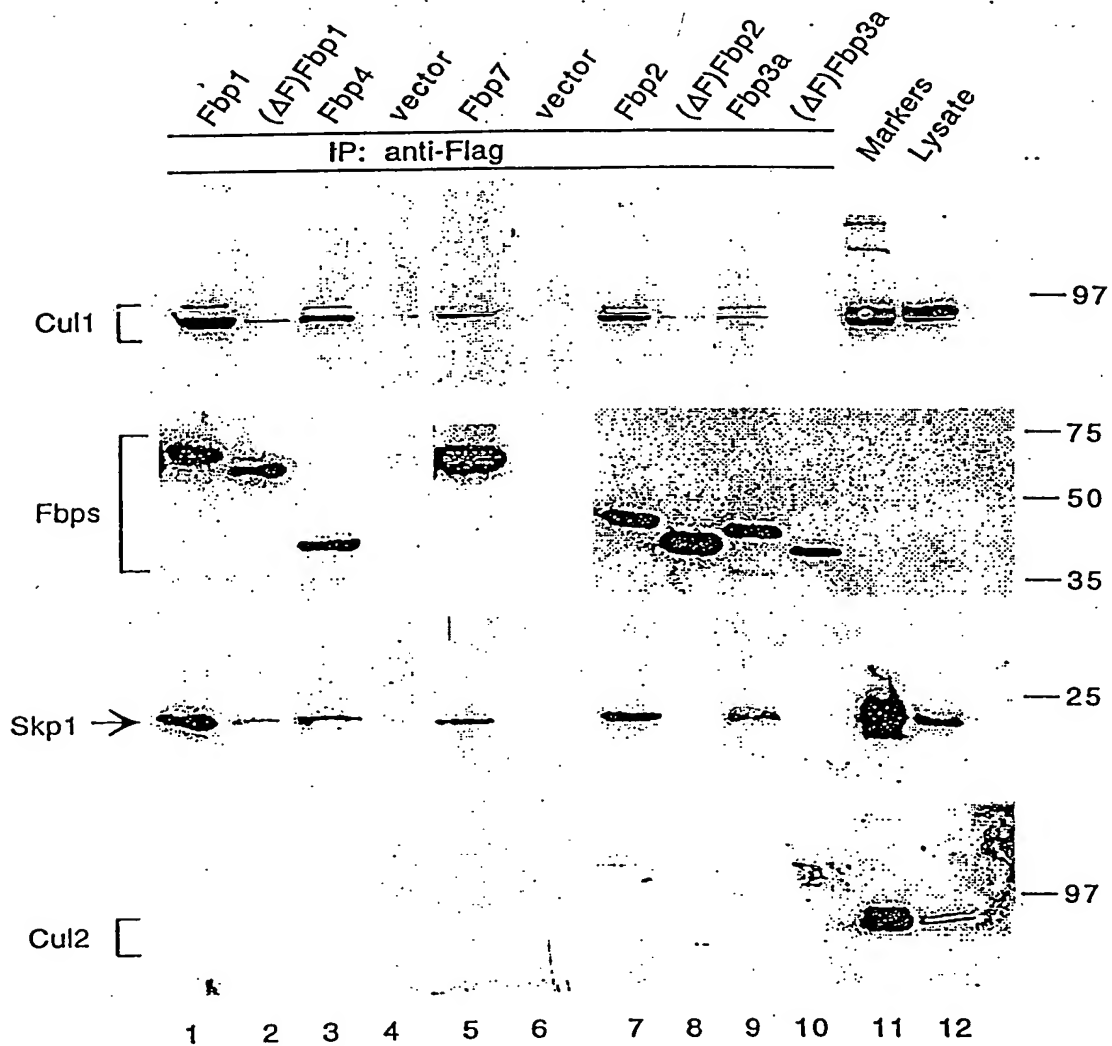


FIG. 30



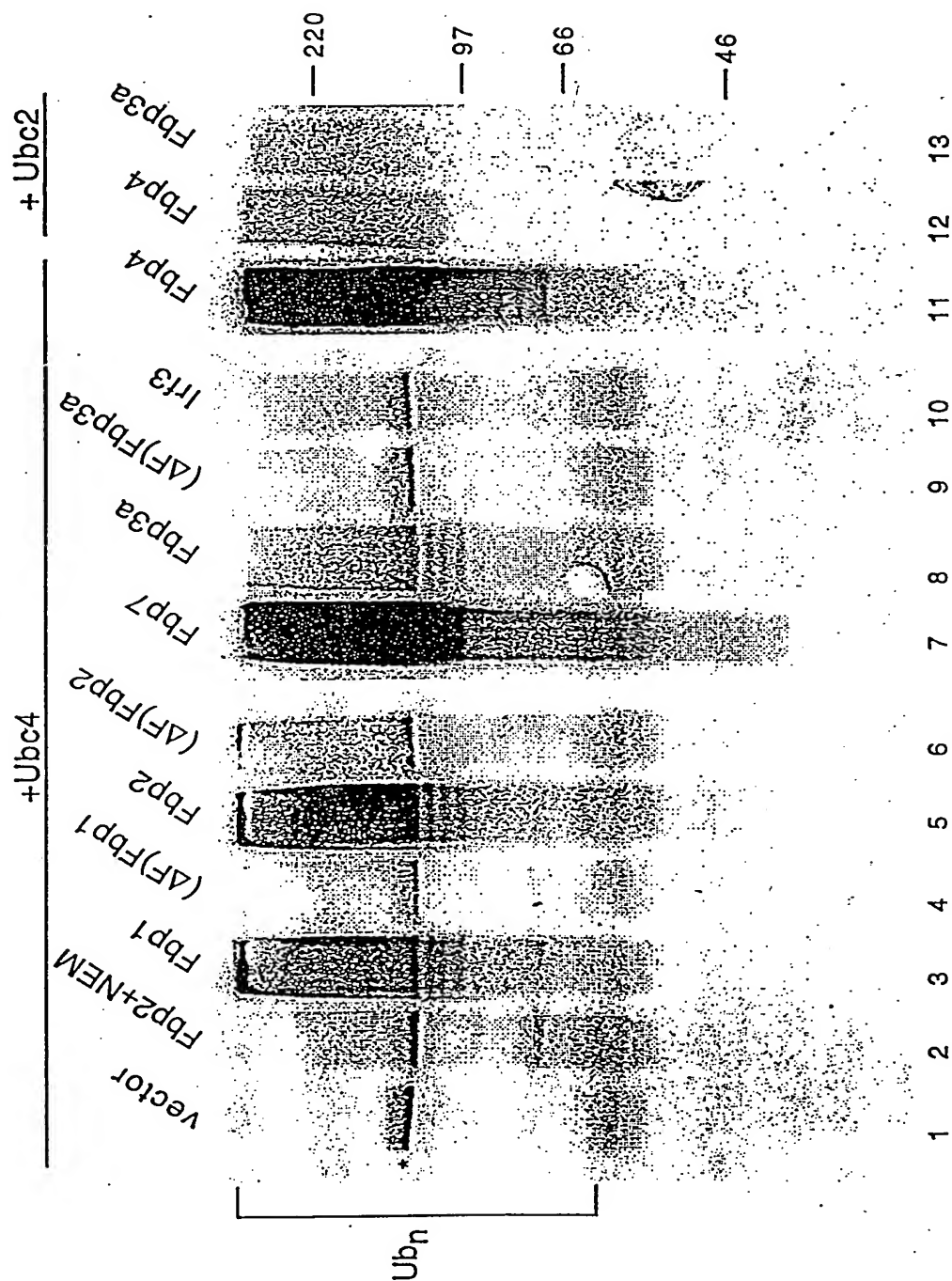


FIG. 31

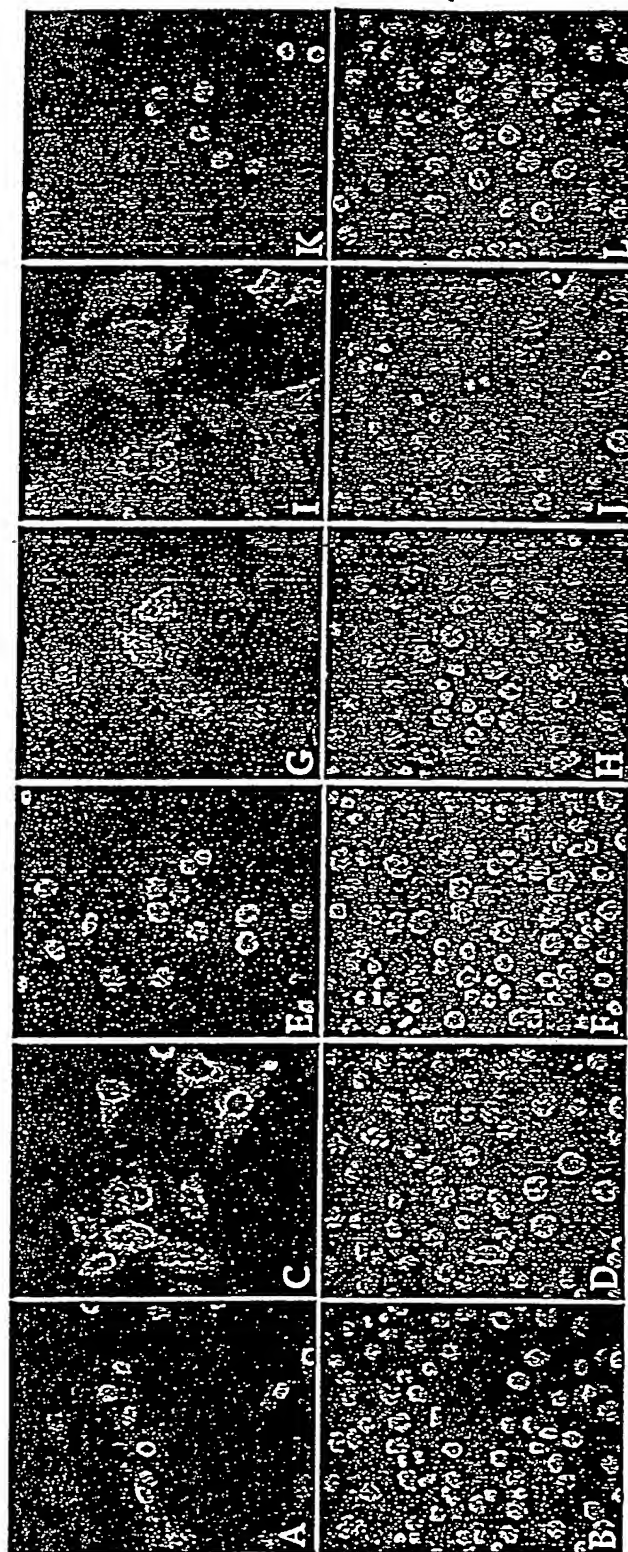


FIG. 32

204070-2172400T

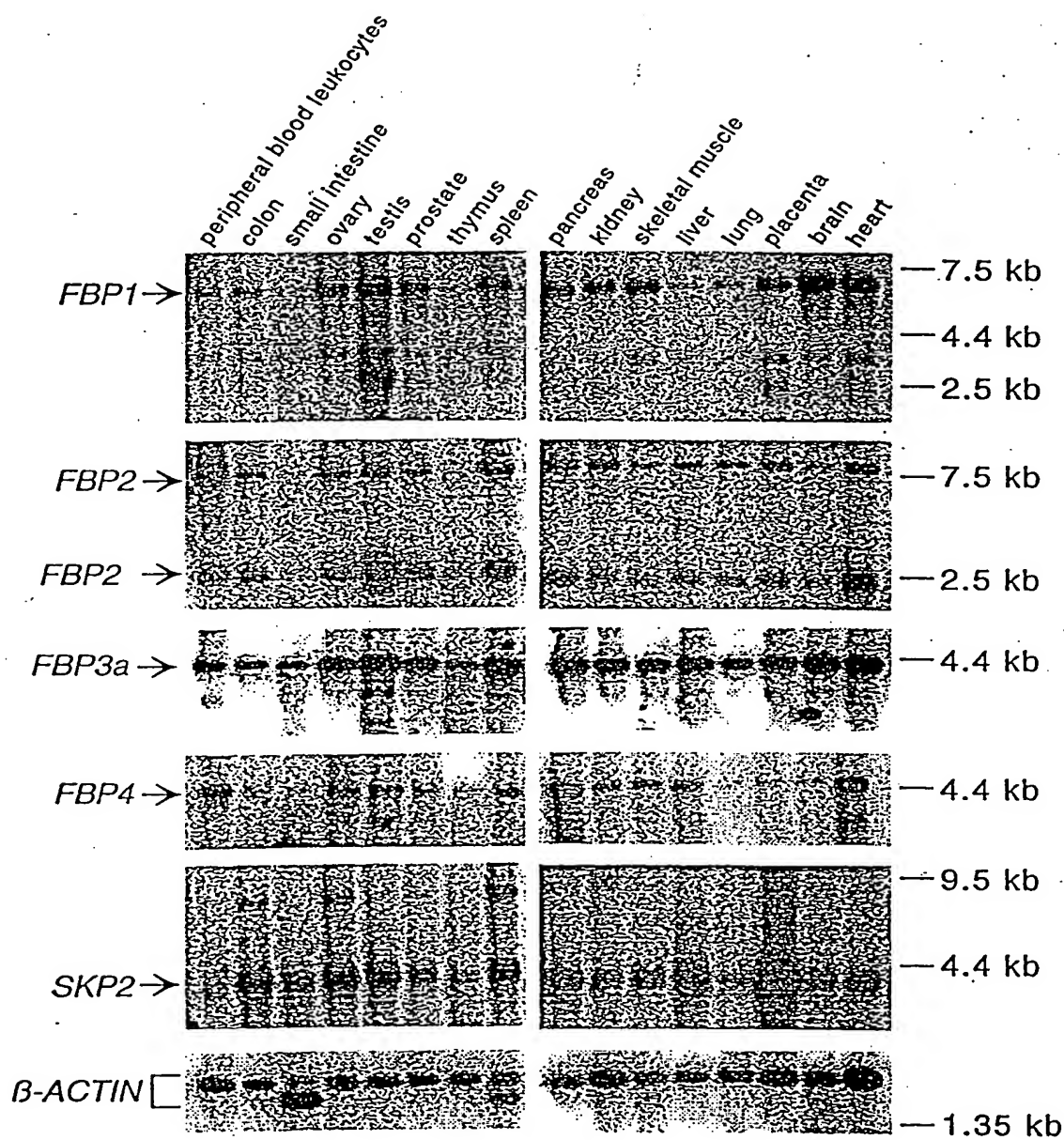


FIG. 33

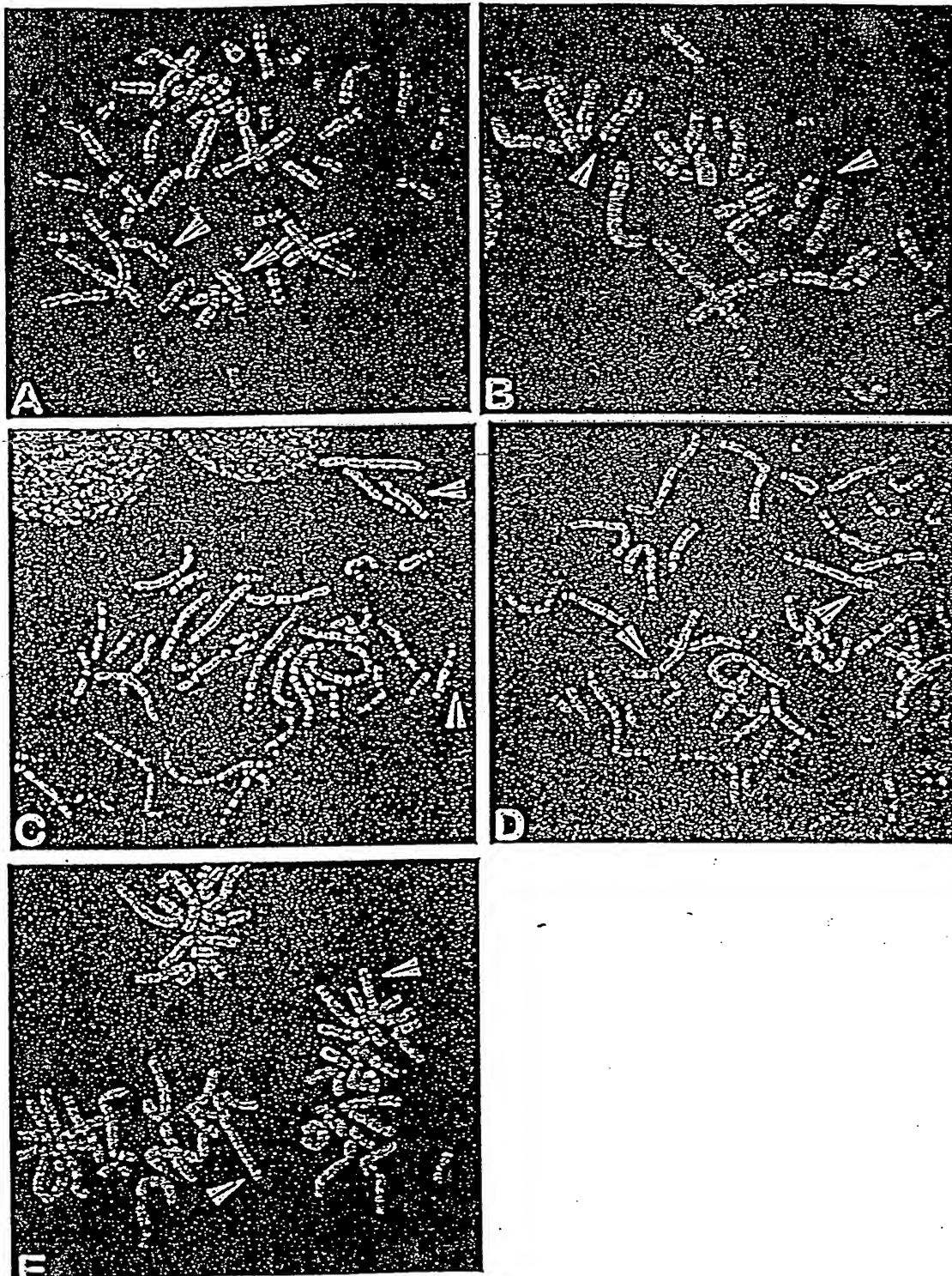


FIG. 34 A-E

204010-172400T

10042417-010702

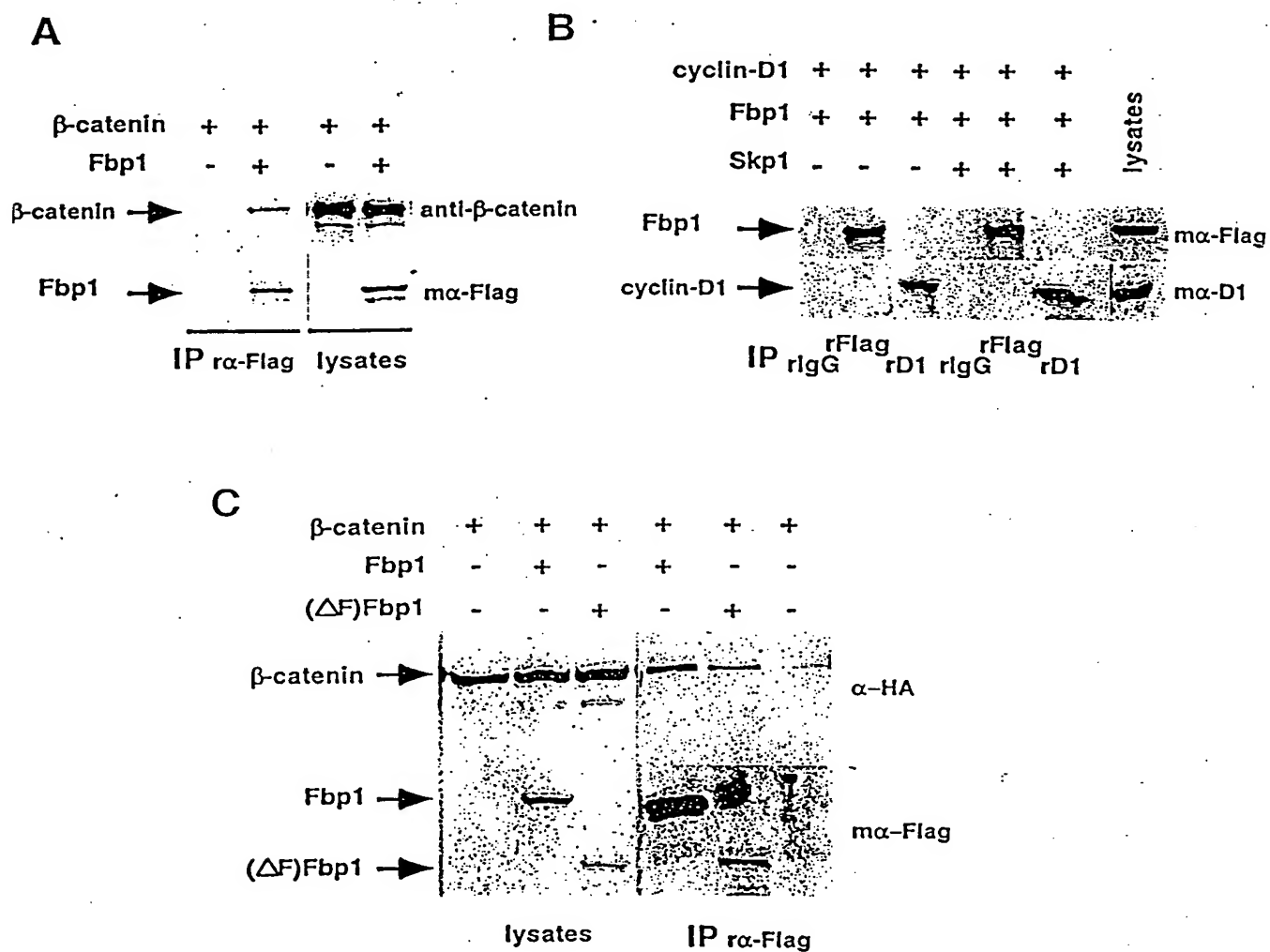


FIG. 35 A-C

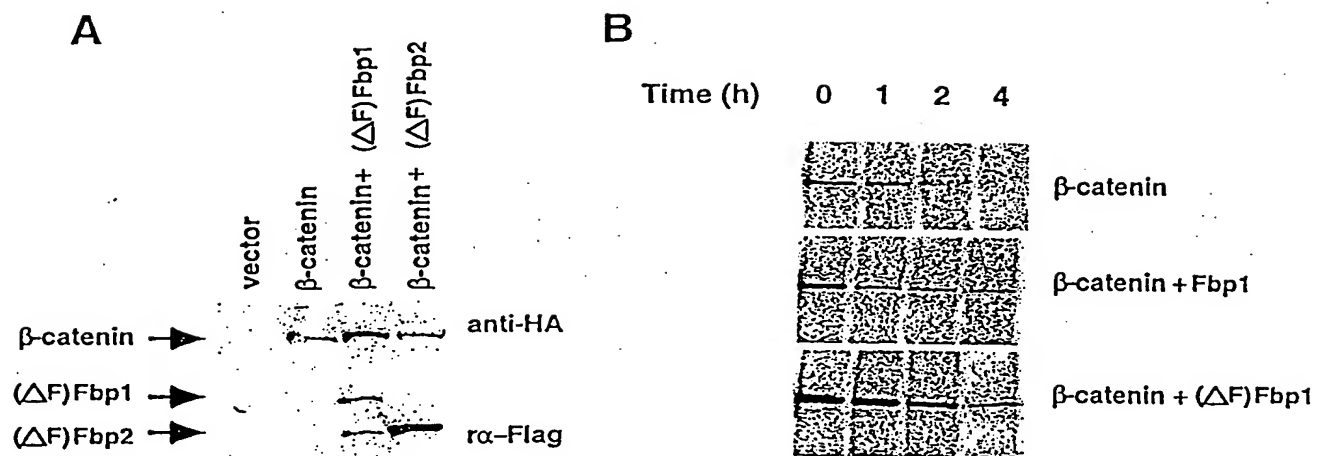


FIG. 36 A-B

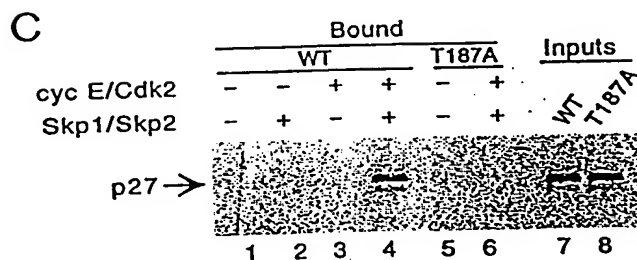
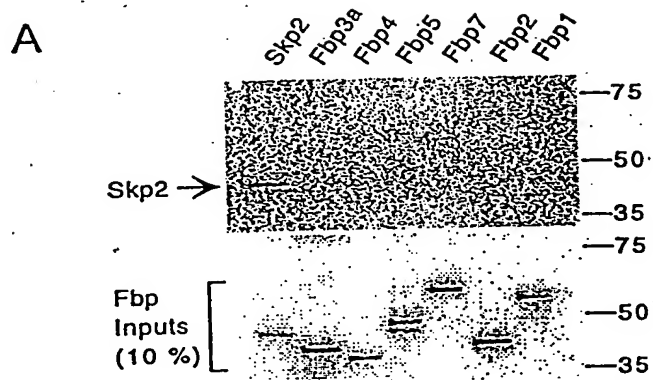


FIG. 37 A-C

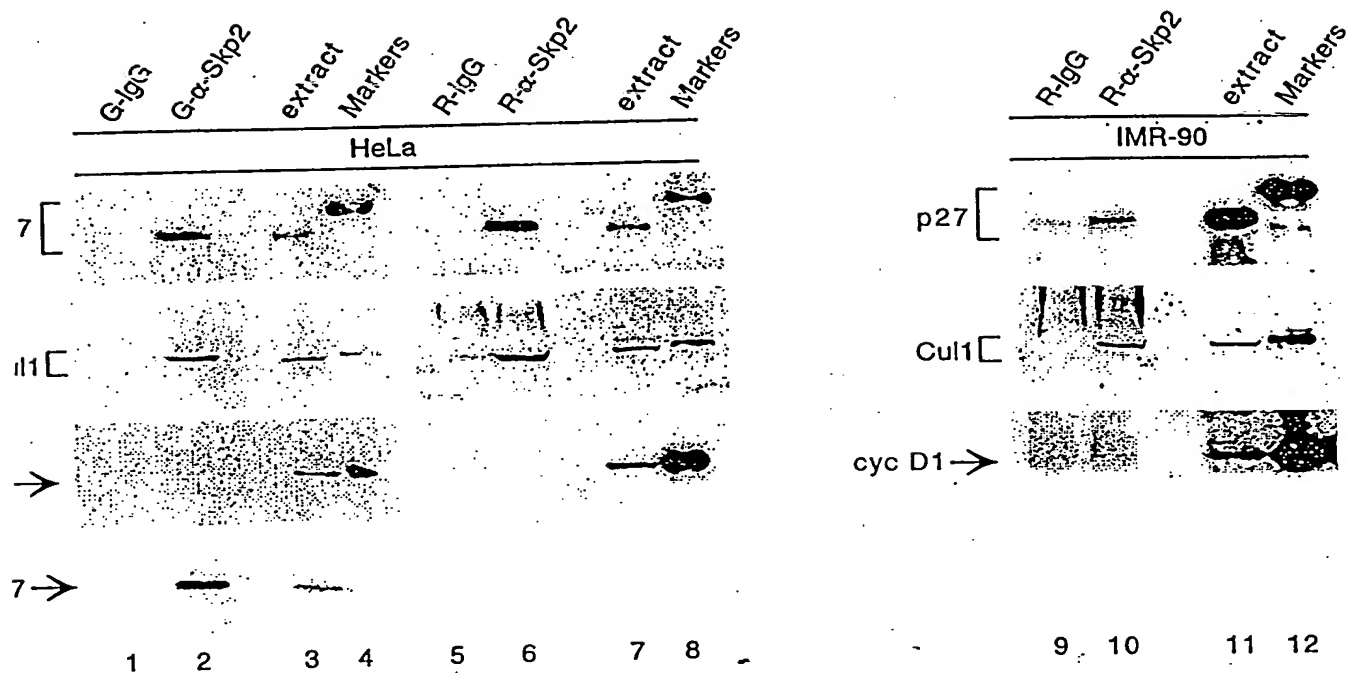
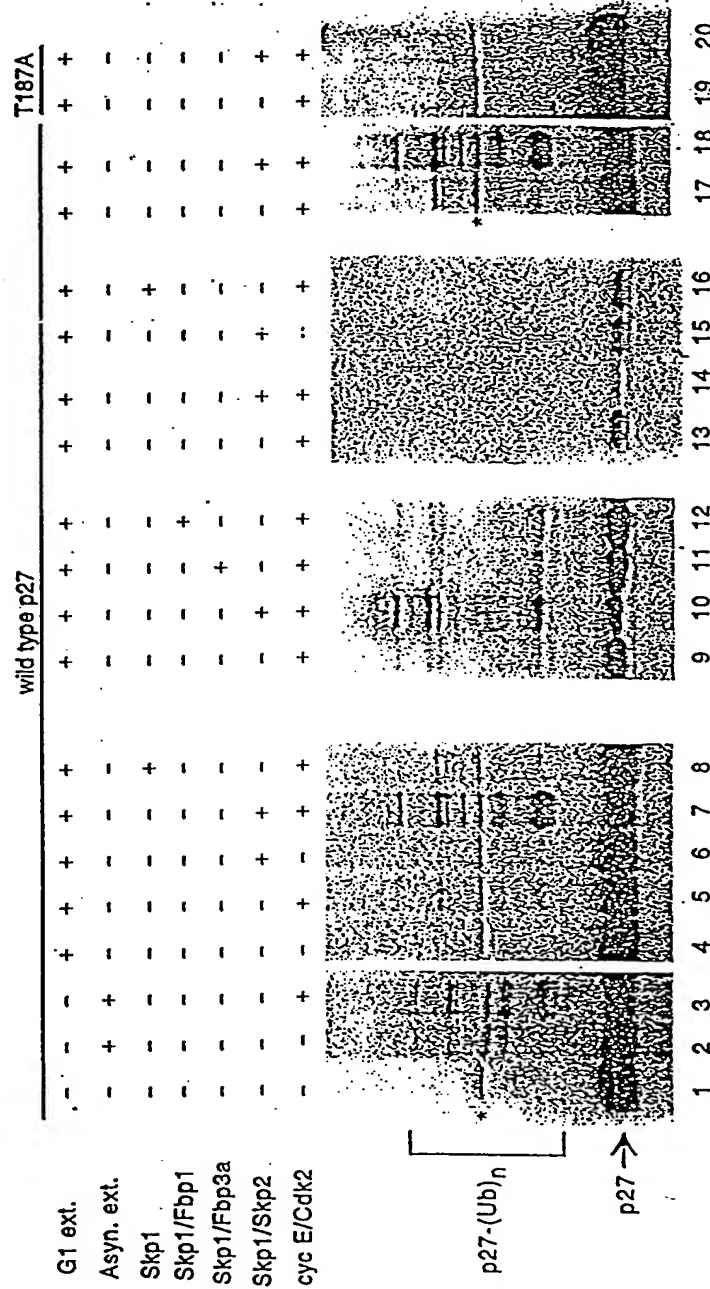


FIG. 38



A



B

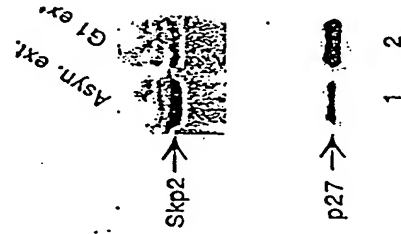


FIG. 39 A-B

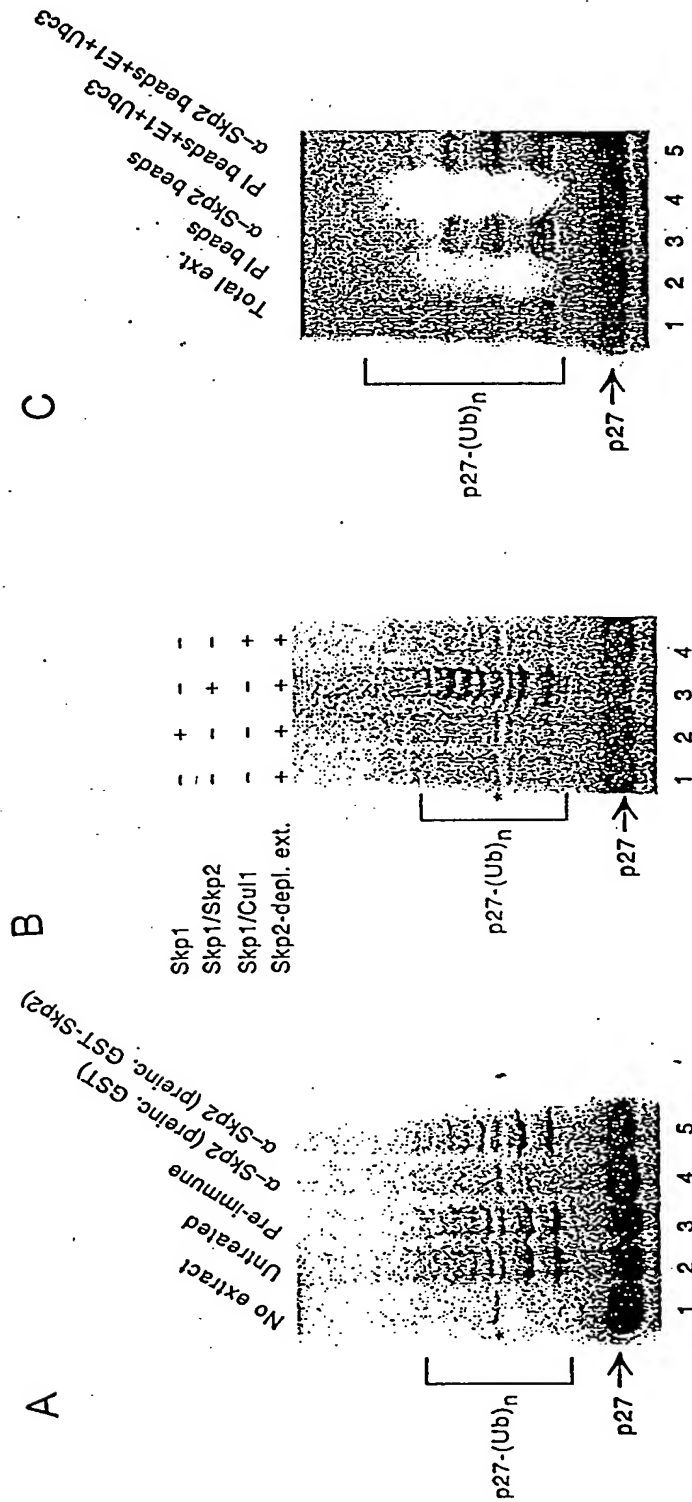
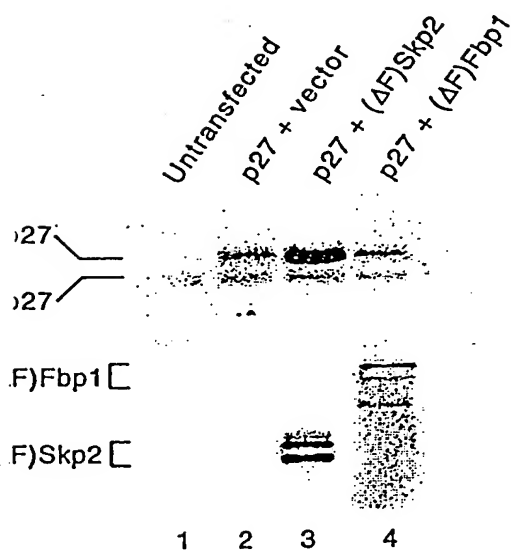


FIG. 40 A-C

202070-21424001



B

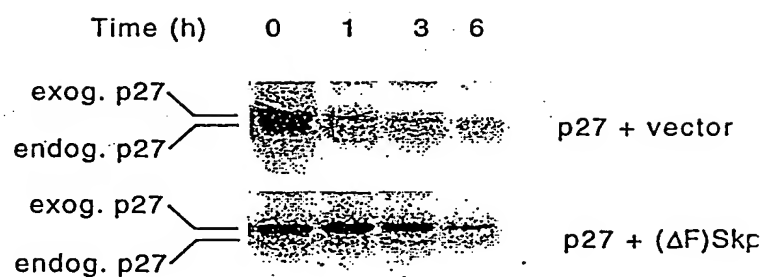


FIG. 41 A-B

5914-090

(SHEET 68 OF 80)

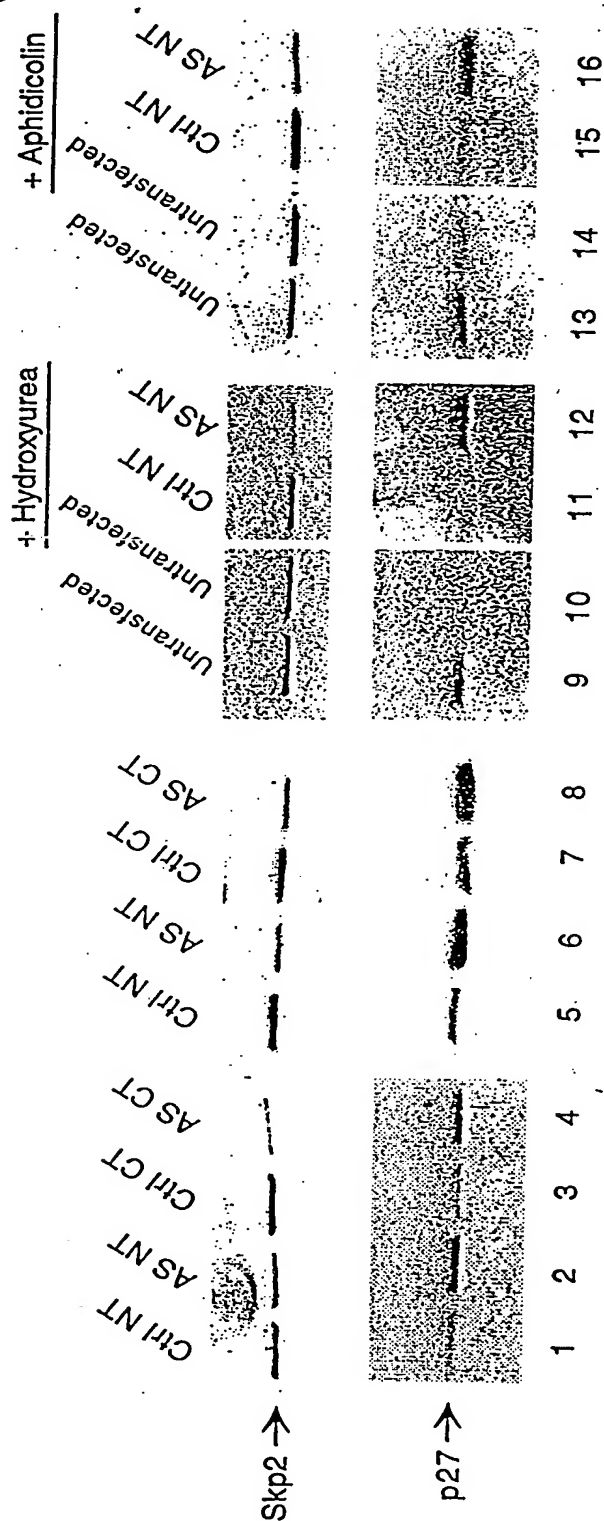


FIG. 42

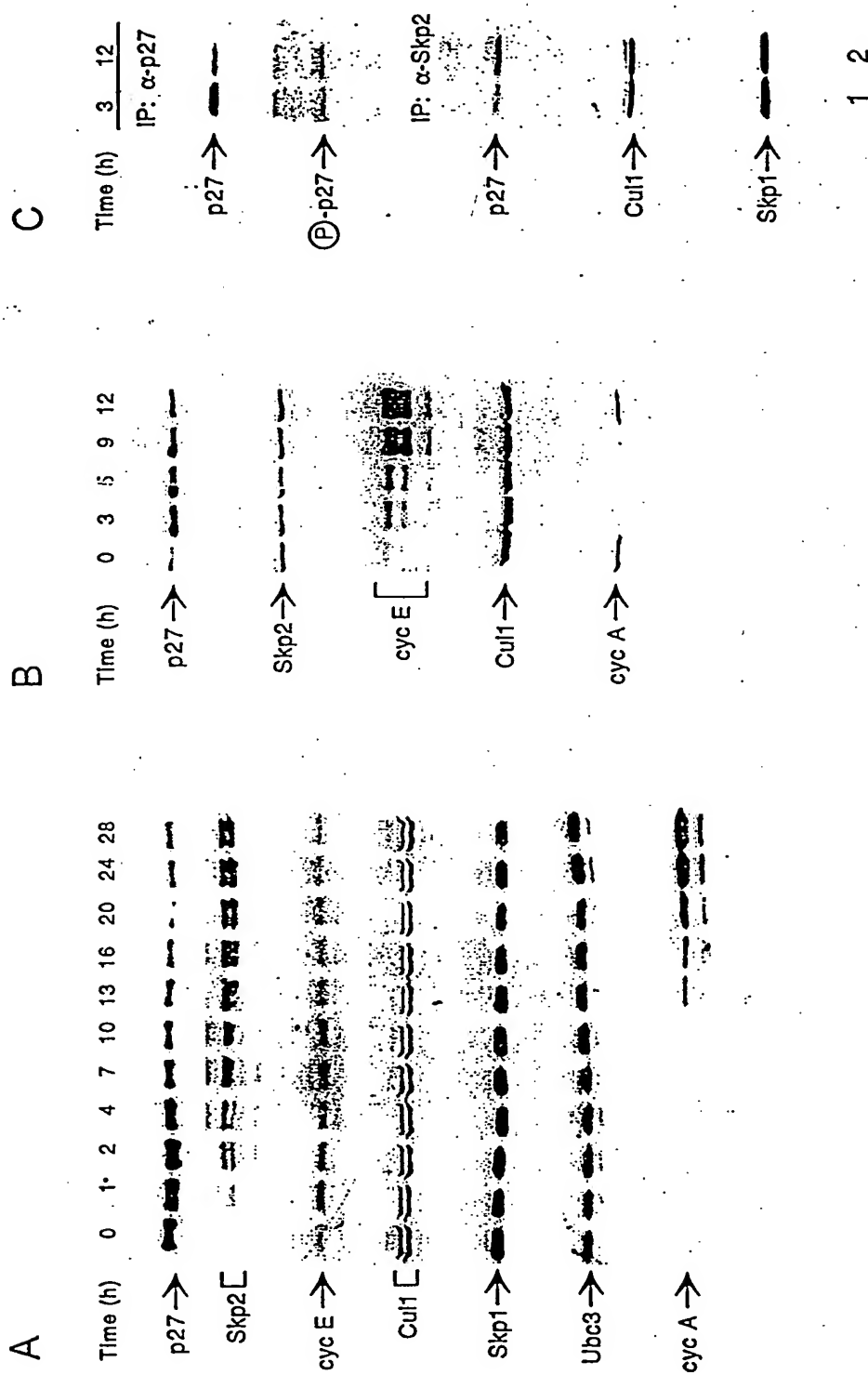


FIG. 43 A-C

5914-090

(SHEET 70 OF 80

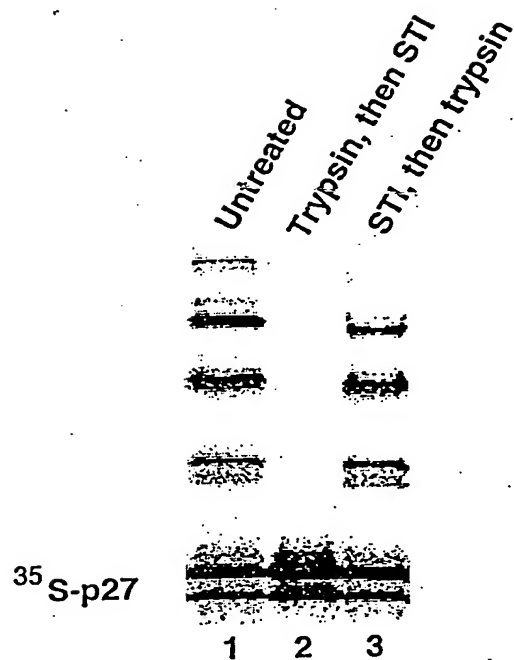
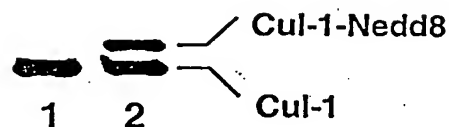


FIG. 44

A



B



C

Cul-1	—	+	—	—	+	—
Cul-1-Nedd8	—	—	+	—	—	+
Fraction 1	+	+	+	—	—	—

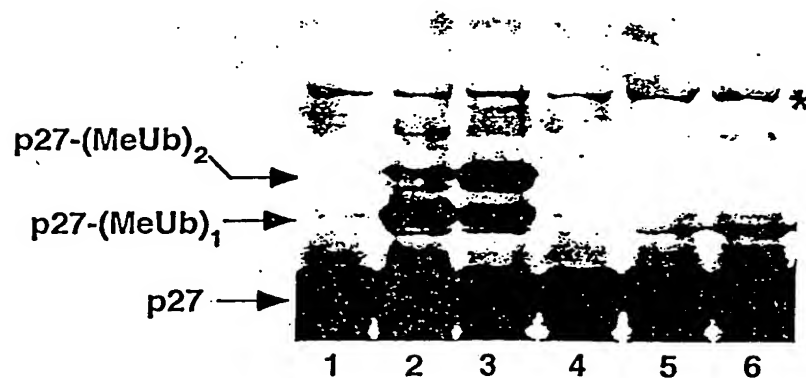
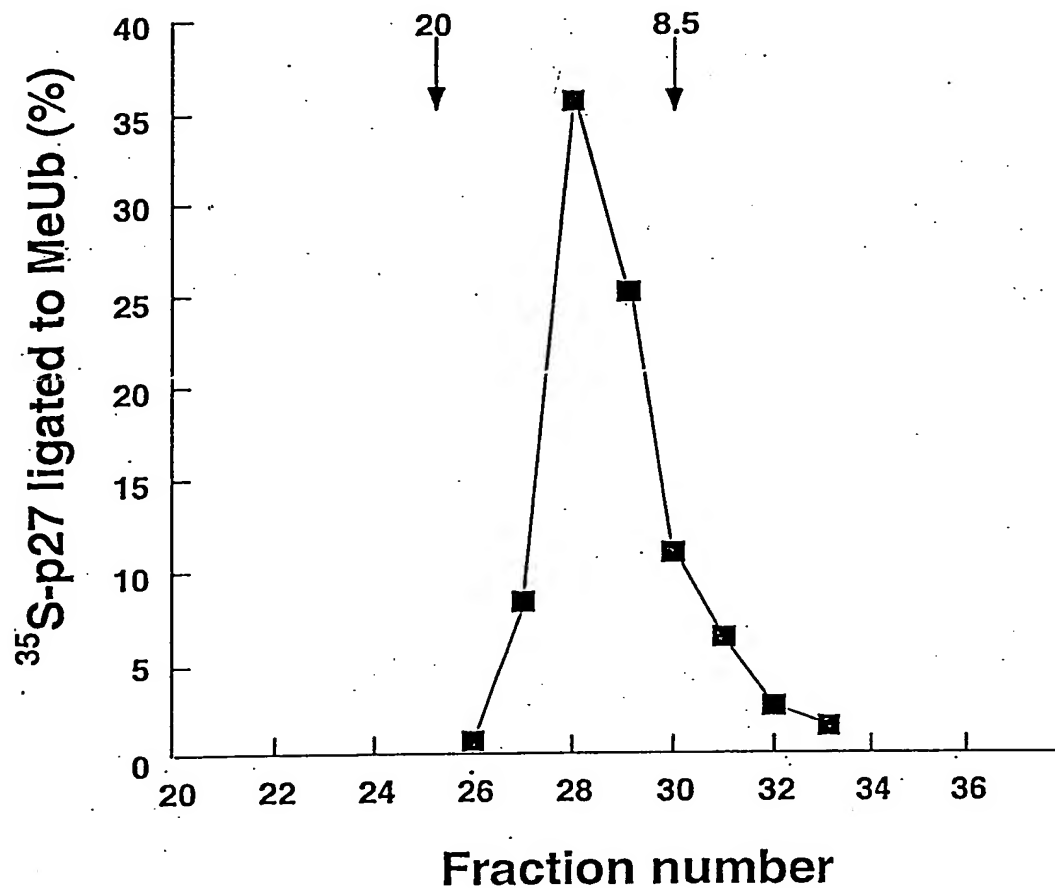


FIG. 45

A.



B.

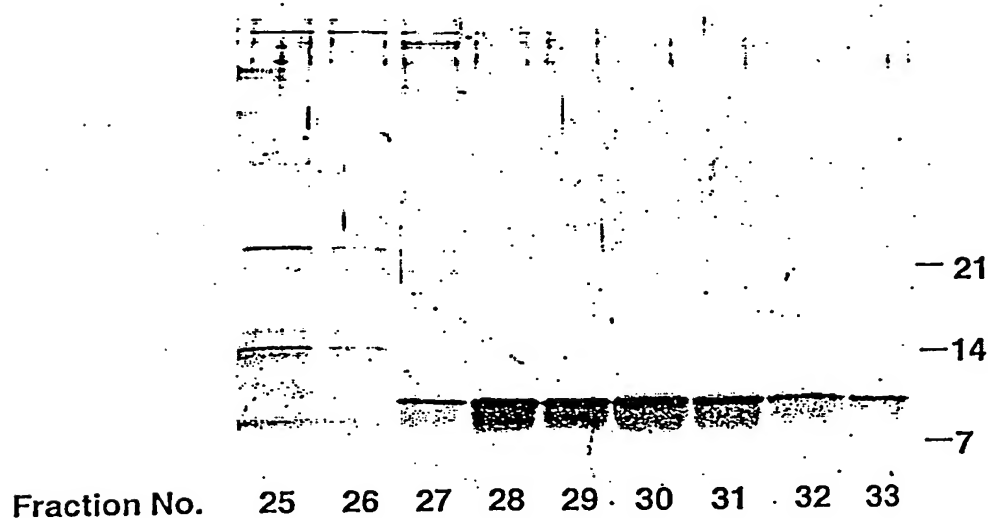


FIG. 46



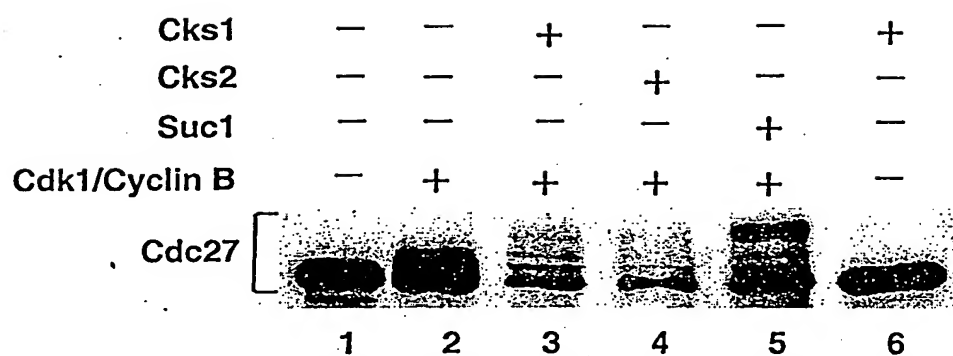


FIG. 47

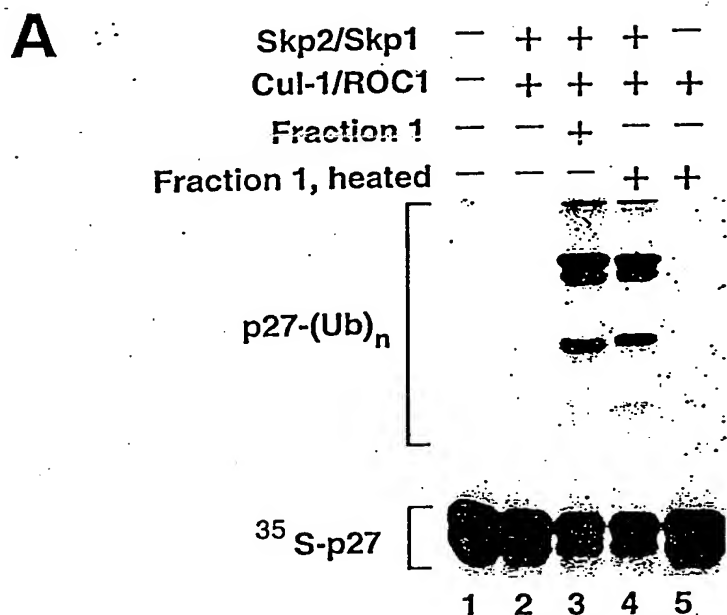


FIG. 48

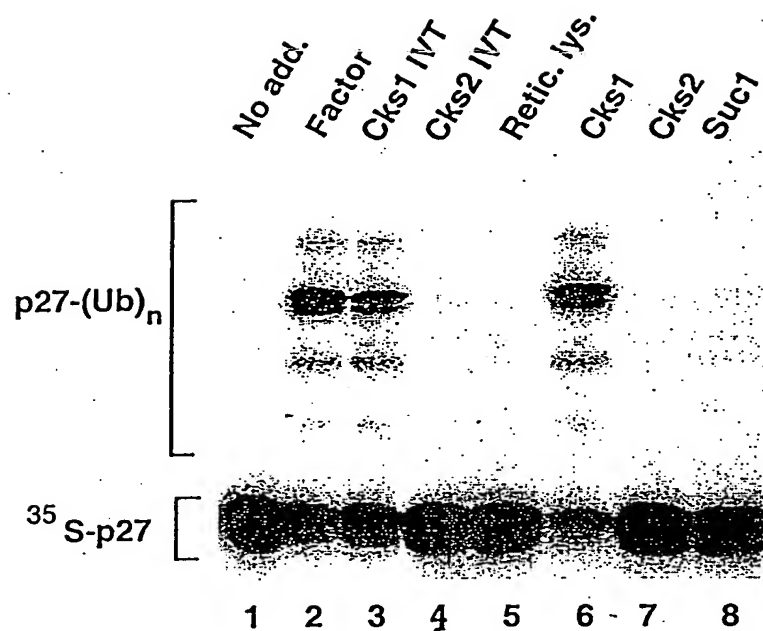
**B**

FIG. 48

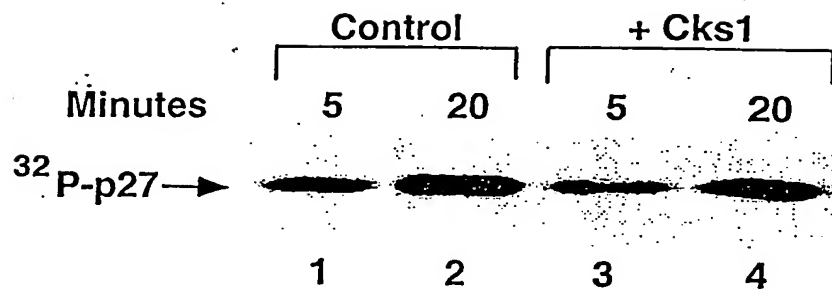
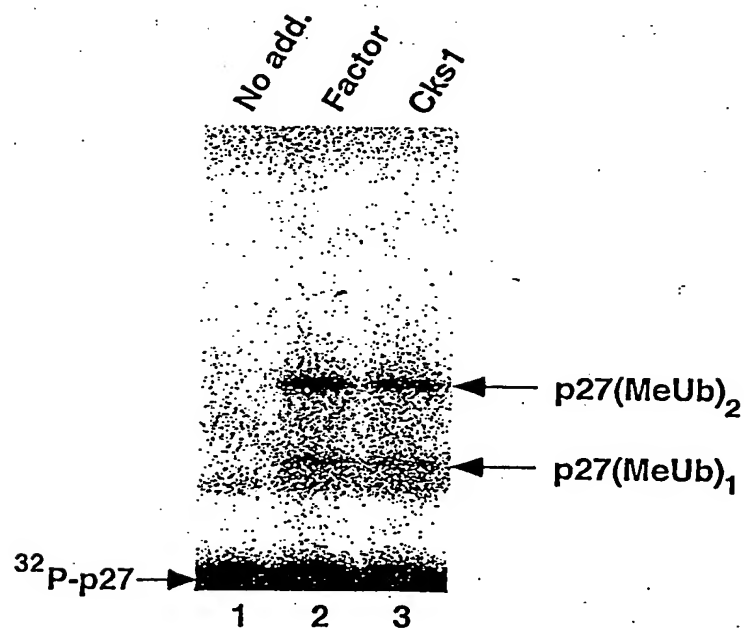
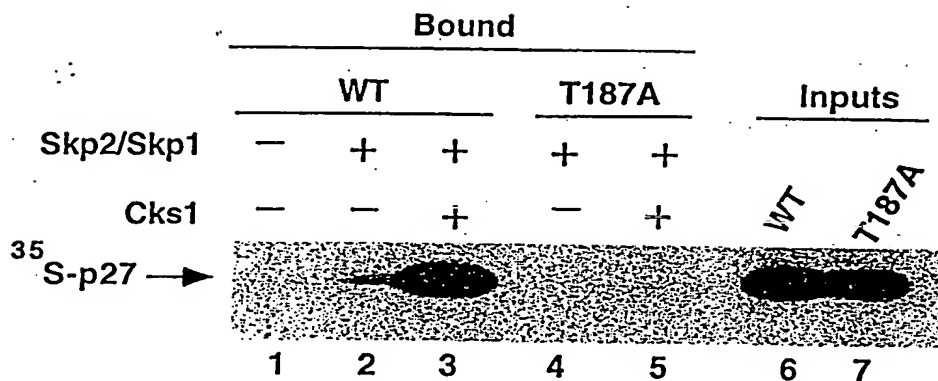
**A****B**

FIG. 49

C



D

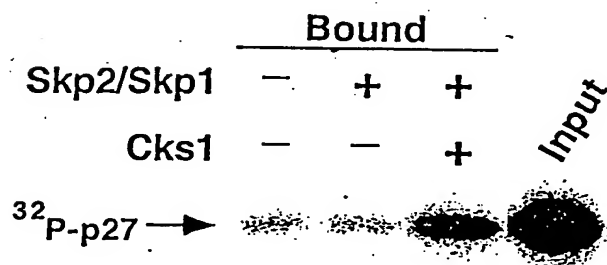
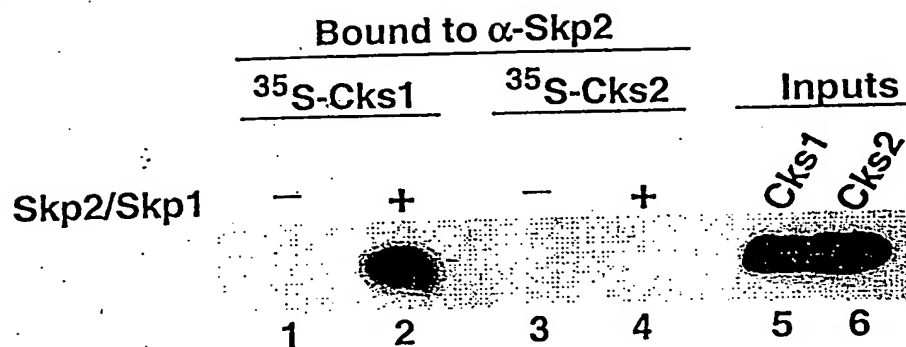


FIG. 49

A



B

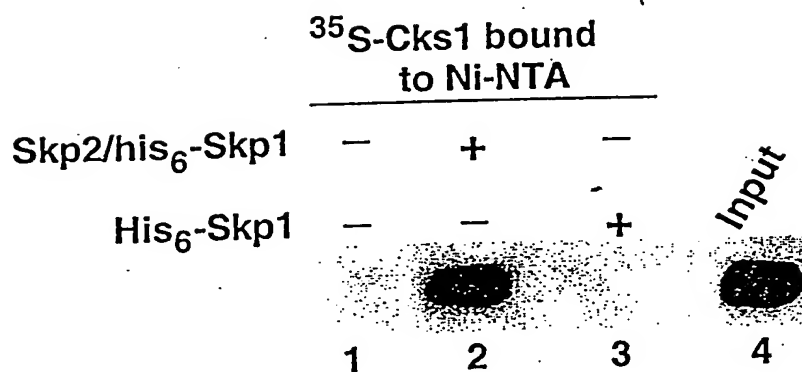
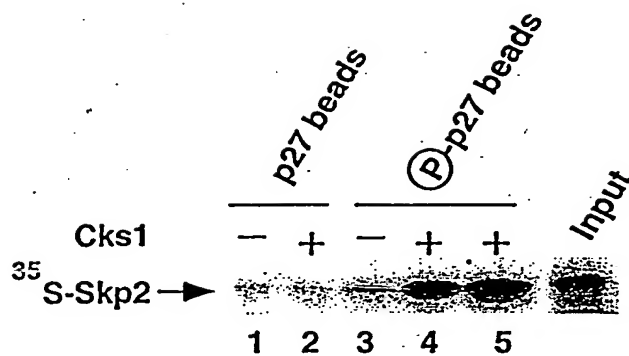


FIG. 5D

C



D

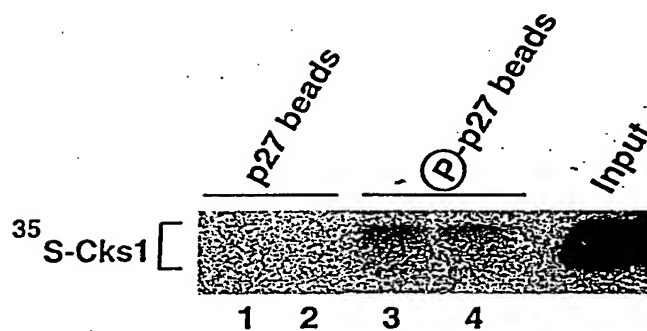


FIG. 5D

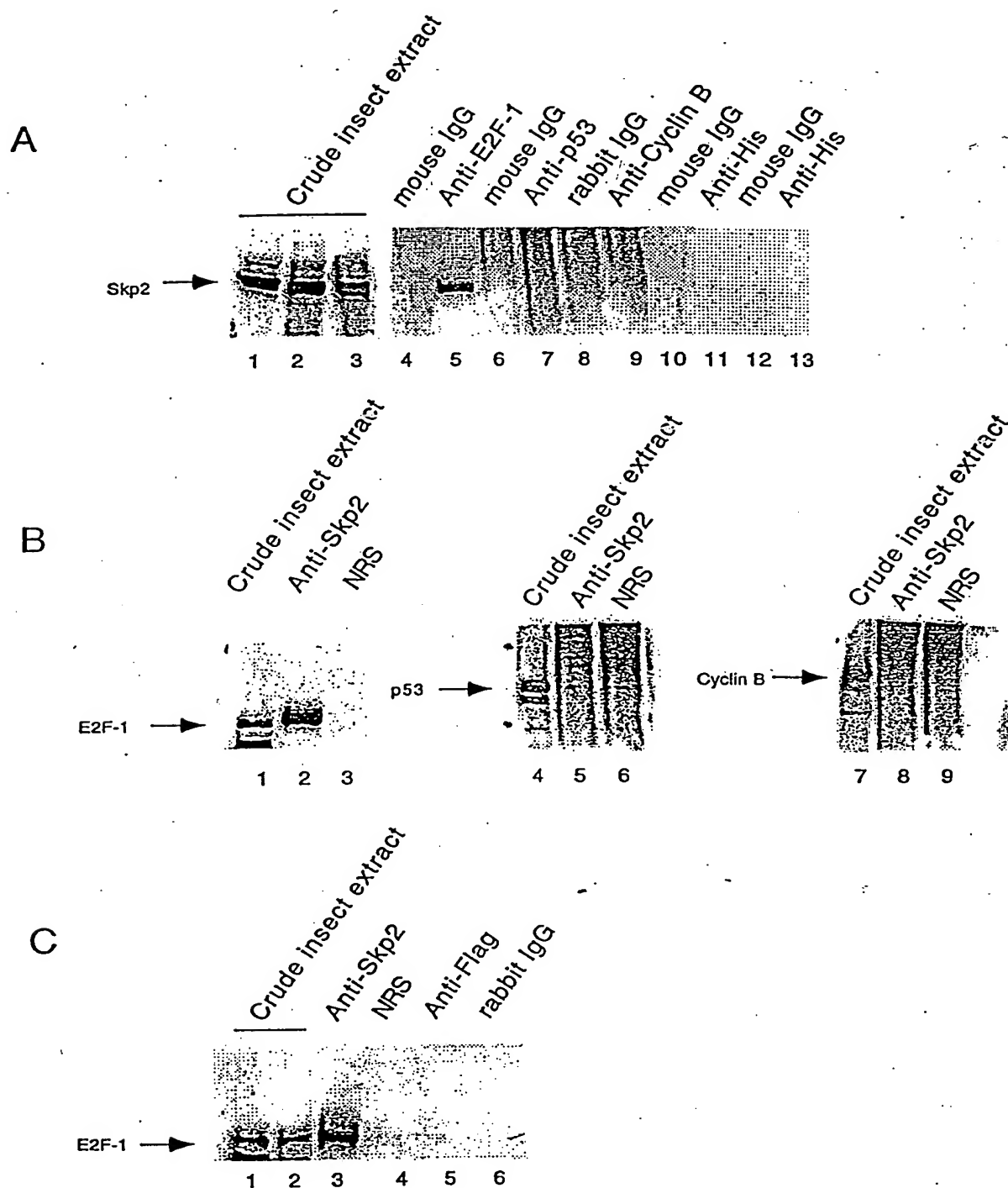


FIG. 51 A-C

202070 " 27424001 10042447 010702